



## Specific Procurement Notice

# Request for Proposals

## Information Systems

(Design, Supply and Installation - Single Stage)

**Purchaser:** Ministry of Information Technology and Telecommunication

**Project:** Digital Economy Enhancement Project

**Contract Title:** Design, Development, Implementation and Support of National Open Data Ecosystem (NODE)

**Country:** Pakistan

**Loan No.:** 75140-PK

**RFP No.:** PK-MOITT-546238-GO-RFP

1. The **Islamic Republic of Pakistan** has received financing from the World Bank toward the cost of the Digital Economy Enhancement Project “DEEP” and intends to apply part of the proceeds toward payments under the contract for **Design, Development, Implementation and Support of National Open Data Ecosystem (NODE)**.
2. The **Ministry of Information Technology and Telecommunication** now invites sealed Proposals from eligible Proposers for **Design, Development, Implementation and Support of National Open Data Ecosystem (NODE)** as further detailed in the Request for Proposals document.
3. The procurement process will be conducted through international competitive procurement using a Request for Proposals (RFP) as specified in the **World Bank’s “Procurement Regulations for IPF Borrowers” July 2016, Revised November 2017 and August 2018, November 2020 and September 2023** (“Procurement Regulations”) and is open to all eligible Proposers as defined in the Procurement Regulations.
4. Proposals will be evaluated in accordance with the evaluation process set out in the Request for Proposals document. The following weightings shall apply for Rated Criteria (including technical and non-price factors): 60% Technical and 40% Financial.
5. Interested eligible Proposers may obtain further information from **Senior Procurement Specialist** ([procurement.specialist@deep.moitt.gov.pk](mailto:procurement.specialist@deep.moitt.gov.pk)) during 10:00 AM – 03:00 PM (Pakistan Standard Time - Business Days) latest by five (05) working days till the deadline for proposal submission date.
6. The Request for Proposals document in English may be downloaded from <https://moitt.gov.pk/Tenders> without any fee(s)/ charge(s). If specifically required by any Proposer, the document in hard/ printed form; on specific written request via official email or printed over official letterhead duly signed and stamped by the authorized signatory of the Proposer, can be sent through courier for a non-refundable amount of PKR 15,000 or for an equivalent amount in a freely convertible currency.

7. A virtual pre-proposal session shall be held at **11:00 AM** (Pakistan Standard Time) on **May 14, 2026**. The link for pre-proposal meeting and further updates shall be available on MOITT website <https://moitt.gov.pk/> under the tab "**Latest News**" and/ or "**Tenders**" after May 07, 2026.
8. Proposals must be delivered to the address below on or before **11:00 AM** (Pakistan Standard Time) dated **June 17, 2026**. Electronic procurement will not be permitted. Late Proposals will be rejected. The outer Proposal envelopes marked "ORIGINAL PROPOSAL", and the inner envelopes marked "TECHNICAL PART" will be publicly opened in the presence of the Proposers' designated representatives and anyone who chooses to attend, at the address below on the same day i.e., **June 17, 2026**, immediately after the Proposal submission deadline. All envelopes marked "FINANCIAL PART" shall remain unopened and will be held in the safe custody of the Purchaser until the second public Proposals opening.
9. All Proposals must be accompanied by a "**Proposal-Securing Declaration**", as per the details/ requirements given at the respective section(s)/ clause(s) in the Request for Proposal document.
10. Attention is drawn to the Procurement Regulations requiring the Borrower to disclose information on the successful Proposer's beneficial ownership, as part of the Contract Award Notice, using the Beneficial Ownership Disclosure Form as included in the Request for Proposal document.
11. The address(es) referred to above is (are):

**Senior Procurement Specialist**

Procurement and Contract Management Cell  
Project Management Unit (PMU)  
Digital Economy Enhancement Project (DEEP)  
2nd Floor, TF Complex, G-9/4  
Islamabad, Pakistan

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# Request for Proposals Information Systems

(Single Stage)

**Design, Development, Implementation and Support of  
National Open Data Ecosystem (NODE)**

|                      |                                                                     |
|----------------------|---------------------------------------------------------------------|
| Country:             | <b>Pakistan</b>                                                     |
| Project Name:        | <b>Digital Economy Enhancement Project</b>                          |
| Implementing Agency: | <b>Ministry of Information Technology and<br/>Telecommunication</b> |
| Loan No:             | <b>75140-PK</b>                                                     |
| Project ID No:       | <b>P174402</b>                                                      |
| RFP/ STEP Ref. No.   | <b>PK-MOITT-546238-GO-RFP</b>                                       |



# Summary

## **Request for Proposals - Information Systems Design, Supply, and Installation (Without Prequalification)**

### **PART 1 – REQUEST for PROPOSALS PROCEDURES**

#### **Section I - Instructions to Proposer (ITP)**

This Section provides relevant information to help Proposers prepare their Proposals. It applies a two-envelope procurement process with application of Rated Criteria. It is based on a one-envelope procurement process. Information is also provided on the submission, opening, and evaluation of Proposals and on the award of Contracts. **Section I contains provisions that are to be used without modification.**

#### **Section II - Proposal Data Sheet (PDS)**

This Section consists of provisions that are specific to each procurement and that supplement the information or requirements included in Section I, Instructions to Proposers.

#### **Section III - Evaluation and Qualification Criteria**

This Section specifies which methodology will be used to determine the Most Advantageous Proposal.

#### **Section IV - Proposal Forms**

This Section contains the forms to be completed by the Proposer and submitted as part of the Proposal.

#### **Section V - Eligible Countries**

This Section contains information regarding eligible countries.

#### **Section VI - Fraud and Corruption**

This section includes the Fraud and Corruption provisions that apply to this procurement process.

### **PART 2 – PURCHASER’S REQUIREMENTS**

#### **Section VII - Requirements for the Information System**

This Section contains Technical Requirements, Implementation Schedule, and System Inventory Tables, as well as Background and Informational Materials

## **PART 3 – CONDITIONS OF CONTRACT AND CONTRACT FORMS**

### **Section VIII - General Conditions of Contract (GCC)**

This Section contains the general clauses to be applied in all contracts. **The text of the clauses in this Section shall not be modified.**

### **Section IX - Special Conditions of Contract (SCC)**

This Section contains the Special Conditions of Contract (SCC). The contents of this Section modify or supplement the General Conditions and shall be prepared by the Purchaser.

### **Section X - Contractual Forms**

This Section contains the Letter of Acceptance, Contract Agreement and other relevant forms.

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# Request for Proposals

## Information Systems

### Design, Development, Implementation and Support of National Open Data Ecosystem (NODE)

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Purchaser: *Ministry of Information Technology and Telecommunication*  
Project: *Digital Economy Enhancement Project*  
Contract Title: *Design, Development, Implementation and Support of National Open Data Ecosystem (NODE)*  
Country: *Pakistan*  
Loan No.: *75140-PK*  
RFP No: *PK-MOITT-546238-GO-RFP*  
Issued On: *April 30, 2026*

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## **PART 1 – REQUEST FOR PROPOSALS PROCEDURES**

## SECTION I - INSTRUCTIONS TO PROPOSERS (ITP)

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## Section I - Instructions to Proposers

### A. GENERAL

- 1. Scope of Proposal**
- 1.1. The Purchaser, as indicated in the PDS, or its duly authorized Purchasing Agent if so specified in the PDS (interchangeably referred to as “the Purchaser” issues this request for proposals document for the supply and installation of the Information System as specified in Section VII, Purchaser’s Requirements. The name, identification and number of lots (contracts) of this RFP are specified in the PDS.
- 1.2. Unless otherwise stated, throughout this request for proposals document definitions and interpretations shall be as prescribed in the Section VIII, General Conditions of Contract.

Throughout this request for proposals document:

- (a) the term “in writing” means communicated in written form (e.g. by mail, e-mail, fax, including if specified in the PDS, distributed or received through the electronic-procurement system used by the Purchaser) with proof of receipt;
- (b) if the context so requires, “singular” means “plural” and vice versa; and
- (c) “Day” means calendar day, unless otherwise specified as “Business Day”. A Business Day is any day that is an official working day of the Borrower. It excludes the Borrower’s official public holidays.
- (d) “ES” means environmental and social (including Sexual Exploitation and Abuse (SEA), and Sexual Harassment (SH));
- (e) “Sexual Exploitation and Abuse” “(SEA)” means the following:

Sexual Exploitation is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;

Sexual Abuse is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.
- (f) “Sexual Harassment” “(SH)” is defined as unwelcome sexual advances, requests for sexual favors, and other verbal

or physical conduct of a sexual nature by the Supplier's Personnel with other Supplier's Personnel or Purchaser's Personnel.

(g) "Supplier's Personnel" is as defined in GCC Clause 1.1; and

(h) "Purchaser's Personnel" is as defined in GCC Clause 1.1.

A non-exhaustive list of (i) behaviors which constitute SEA and (ii) behaviors which constitute SH is attached to the Code of Conduct form in Section IV

## **2. Source of Funds**

- 2.1. The Borrower or Recipient (hereinafter called "Borrower") indicated in the PDS has applied for or received financing (hereinafter called "funds") from the International Bank for Reconstruction and Development or the International Development Association (hereinafter called "the Bank") in an amount specified in the PDS toward the project named in the PDS. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this request for proposals document is issued.
- 2.2. Payments by the Bank will be made only at the request of the Borrower and upon approval by the Bank in accordance with the terms and conditions of the Loan (or other financing) Agreement between the Borrower and the Bank (hereinafter called the Loan Agreement), and will be subject in all respects to the terms and conditions of that Loan (or other financing) Agreement. The Loan (or other financing) Agreement prohibits a withdrawal from the loan account for the purpose of any payment to persons or entities, or for any import of equipment, materials or any other goods, if such payment or import is prohibited by a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations. No party other than the Borrower shall derive any rights from the Loan (or other financing) Agreement or have any claim to the funds.

## **3. Fraud and Corruption**

- 3.1. The Bank requires compliance with the Bank's Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework, as set forth in Section VI.
- 3.2. In further pursuance of this policy, Proposers shall permit and shall cause their agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and personnel, to permit the Bank to inspect all accounts, records and other documents relating to any initial selection process,

prequalification process, bid submission, proposal submission and contract performance (in the case of award), and to have them audited by auditors appointed by the Bank.

#### **4. Eligible Proposers**

- 4.1. A Proposer may be a firm that is a private entity, a state-owned enterprise or institution subject to ITP 4.6, or any combination of such entities in the form of a joint venture (JV) under an existing agreement or with the intent to enter into such an agreement supported by a letter of intent. In the case of a joint venture, all members shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms. The JV shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the members of the JV during the procurement process and, in the event the JV is awarded the Contract, during contract execution. Unless specified in the PDS, there is no limit on the number of members in a JV.
- 4.2. A Proposer shall not have a conflict of interest. Any Proposer found to have a conflict of interest shall be disqualified. A Proposer may be considered to have a conflict of interest for the purpose of this procurement process, if the Proposer:
- (a) directly or indirectly controls, is controlled by or is under common control with another Proposer; or
  - (b) receives or has received any direct or indirect subsidy from another Proposer; or
  - (c) has the same legal representative as another Proposer; or
  - (d) has a relationship with another Proposer, directly or through common third parties, that puts it in a position to influence the Proposal of another Proposer, or influence the decisions of the Purchaser regarding this procurement process; or
  - (e) any of its affiliates participates as a consultant in the preparation of the design or technical specifications of the Information System that are the subject of the Proposal; or
  - (f) or any of its affiliates has been hired (or is proposed to be hired) by the Purchaser or Borrower as Project Manager for the Contract implementation; or
  - (g) would be providing goods, works, or non-consulting services resulting from or directly related to consulting services for the preparation or implementation of the

project specified in the PDS ITP 2.1 that it provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm; or

- (h) has a close business or family relationship with a professional staff of the Borrower (or of the project implementing agency, or of a recipient of a part of the loan) who: (i) are directly or indirectly involved in the preparation of the request for proposals document or specifications of the Contract, and/or the Proposal evaluation process of such Contract; or (ii) would be involved in the implementation or supervision of such Contract unless the conflict stemming from such relationship has been resolved in a manner acceptable to the Bank throughout the procurement process and execution of the Contract.

- 4.3. A firm that is a Proposer (either individually or as a JV member) shall not participate as a Proposer or as JV member in more than one Proposal except for permitted alternative Proposals. Such participation shall result in the disqualification of all Proposals in which the firm is involved. However, this does not limit the participation of a Proposer as subcontractor in another Proposal or of a firm as a subcontractor in more than one Proposal.
- 4.4. A Proposer may have the nationality of any country, subject to the restrictions pursuant to ITP 4.8. A Proposer shall be deemed to have the nationality of a country if the Proposer is constituted, incorporated or registered in and operates in conformity with the provisions of the laws of that country, as evidenced by its articles of incorporation (or equivalent documents of constitution or association) and its registration documents, as the case may be. This criterion also shall apply to the determination of the nationality of proposed sub-contractors or sub-consultants for any part of the Contract including related Services.

- 4.5. A Proposer that has been sanctioned by the Bank, pursuant to the Bank's Anti-Corruption Guidelines, and in accordance with its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework as described in Section VI paragraph 2.2 d., shall be ineligible to be initially selected for, prequalified for, bid for, propose for, or be awarded a Bank-financed contract or benefit from a Bank-financed contract, financially or otherwise, during such period of time as the Bank shall have determined. The list of debarred firms and individuals is available at the electronic address specified in the PDS.
- 4.6. Proposers that are state-owned enterprises or institutions in the Purchaser's Country may be eligible to compete and be awarded a Contract(s) only if they can establish, in a manner acceptable to the Bank, that they (i) are legally and financially autonomous (ii) operate under commercial law, and (iii) are not under supervision of the Purchaser.
- 4.7. A Proposer shall not be under suspension from bidding or submitting proposals by the Purchaser as the result of the operation of a Bid-Securing Declaration or Proposal-Securing Declaration.
- 4.8. Firms and individuals may be ineligible if so indicated in Section V and (a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country, provided that the Bank is satisfied that such exclusion does not preclude effective competition for the supply of goods or the contracting of works or services required; or (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of works or services from that country, or any payments to any country, person, or entity in that country.
- 4.9. This request for proposal process is open for all eligible Proposers, unless otherwise specified in ITP 15.2.
- 4.10. A Proposer shall provide such documentary evidence of eligibility satisfactory to the Purchaser, as the Purchaser shall reasonably request.
- 4.11. A firm that is under a sanction of debarment by the Borrower from being awarded a contract is eligible to participate in this procurement, unless the Bank, at the Borrower's request, is satisfied that the debarment; (a) relates to fraud or corruption,

and (b) followed a judicial or administrative proceeding that afforded the firm adequate due process.

## **5. Eligible Goods and Services**

- 5.1. The Information Systems to be supplied under the Contract and financed by the Bank may have their origin in any country in accordance with Section V, Eligible Countries.
- 5.2. For the purposes of this request for proposals document, the term “Information System” means all:
  - (a) the required information technologies, including all information processing and communications-related hardware, software, supplies, and consumable items that the Supplier is required to design, supply and install under the Contract, plus all associated documentation, and all other materials and goods to be designed, supplied, installed, integrated, and made operational; and
  - (b) the related software development, transportation, insurance, installation, customization, integration, commissioning, training, technical support, maintenance, repair, and other services necessary for proper operation of the Information System to be provided by the selected Proposer and as specified in the Contract.
- 5.3. For purposes of ITP 5.1 above, “origin” means the place where the goods and services making the Information System are produced in or supplied from. An Information System is deemed to be produced in a certain country when, in the territory of that country, through software development, manufacturing, or substantial and major assembly or integration of components, a commercially recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

## **B. CONTENTS OF THE REQUEST FOR PROPOSALS DOCUMENT**

6. **Sections of the Request for Proposals Document**
  - 6.1. The request for proposals document consists of Parts 1, 2, and 3, which include all the sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITP 8:

### **PART 1 - Request for Proposals Procedures**

Section I - Instructions to Proposers (ITP)

Section II - Proposal Data Sheet (PDS)

Section III - Evaluation and Qualification Criteria

Section IV - Proposal Forms

Section V - Eligible Countries

Section VI - Fraud and Corruption

**PART 2 - Purchaser's Requirements**

Section VII - Requirements of the IS, including:

- Technical Requirements
- Implementation Schedule
- System Inventory Tables
- Background and Informational Materials

**PART 3 - Contract**

Section VIII - General Conditions of Contract

Section IX -Special Conditions of Contract

Section X - Contract Forms

- 6.2. The Specific Procurement Notice – Request for Proposals (RFP) issued by the Purchaser is not part of this request for proposals document.
- 6.3. Unless obtained directly from the Purchaser, the Purchaser is not responsible for the completeness of the document, responses to requests for clarification, the Minutes of the pre-Proposal meeting (if any), or Addenda to the request for proposals document in accordance with ITP 8. In case of any contradiction, documents obtained directly from the Purchaser shall prevail.
- 6.4. The Proposer is expected to examine all instructions, forms, terms, and specifications in the request for proposals document and to furnish with its Proposal all information or documentation as is required by the request for proposals document.

- 7. Clarification of Request for Proposals Document, Site Visit, Pre-Proposal Meeting**
- 7.1. A Proposer requiring any clarification of the request for proposals document shall contact the Purchaser in writing at the Purchaser's address specified in the PDS or raise its enquiries during the pre-Proposal meeting if provided for in accordance with ITP 7.4. The Purchaser will respond in writing to any request for clarification, provided that such request is received prior to the deadline for submission of Proposals within a period specified in the PDS. The Purchaser's shall forward copies of its response to all Proposers who have acquired the request for proposals document in accordance with ITP 6.3, including a description of the inquiry but without identifying its source. If so specified in the PDS, the Purchaser shall also promptly publish its response at the web page identified in the PDS. Should the Purchaser deem it necessary to amend the request for proposals document as a result of a request for clarification, it shall do so following the procedure under ITP 8 and ITP 23.2.
- 7.2. The Proposer may wish to visit and examine the site where the Information System is to be installed and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Proposal and entering into a contract. The costs of visiting the site shall be at the Proposer's own expense.
- 7.3. The Proposer and any of its personnel or agents will be granted permission by the Purchaser to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the Proposer, its personnel, and agents will release and indemnify the Purchaser and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
- 7.4. The Proposer's designated representative is invited to attend a pre-Proposal meeting and/or a site visit, if provided for in the PDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5. The Proposer is requested, as far as possible, to submit any questions in writing, to reach the Purchaser not later than one week before the meeting.
- 7.6. Minutes of the pre-Proposal meeting, including the text of the questions raised without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Proposers who have acquired the request for proposals document in accordance with ITP 6.3. Any

modification to the request for proposals document that may become necessary as a result of the pre-Proposal meeting shall be made by the Purchaser exclusively through the issue of an Addendum pursuant to ITP 8 and not through the minutes of the pre-Proposal meeting.

7.7. Nonattendance at the pre-Proposal meeting will not be a cause for disqualification of a Proposer.

**8. Amendment of Request for Proposals Document**

8.1. At any time prior to the deadline for submission of Proposals, the Purchaser may amend the request for proposals document by issuing addenda.

8.2. Any addendum issued shall be part of the request for proposals document and shall be communicated in writing to all who have obtained the request for proposals document from the Purchaser in accordance with ITP 6.3. The Purchaser shall also promptly publish the addendum on the Purchaser's web page in accordance with ITP 7.1.

8.3. To give prospective Proposers reasonable time in which to take an addendum into account in preparing their Proposals, the Purchaser may, at its discretion, extend the deadline for the submission of Proposals, pursuant to ITP 23.2.

## **C. PREPARATION OF PROPOSALS**

**9. Cost of Proposals**

9.1. The Proposer shall bear all costs associated with the preparation and submission of its Proposal, and the Purchaser shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Request for Proposals process.

**10. Language of Proposal**

10.1. The Proposal, as well as all correspondence and documents relating to the Proposal exchanged by the Proposer and the Purchaser, shall be written in the language specified in the PDS. Supporting documents and printed literature that are part of the Proposal may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the PDS, in which case, for purposes of interpretation of the Proposal, such translation shall govern.

**11. Documents Comprising the Proposal**

11.1. The Proposal shall comprise two Parts, namely the Technical Part and the Financial Part. These two Parts shall be submitted simultaneously in two separate sealed envelopes (two-envelope procurement process). One envelope shall contain only information relating to the Technical Part and the other, only information relating to the Financial Part. These two envelopes

shall be enclosed in a separate sealed outer envelope marked “Original Proposal”.

11.2. The Technical Part shall contain the following:

- (a) **Letter of Proposal**-Technical Part, prepared in accordance with ITP 12;
- (b) **Proposal Security or Proposal-Securing Declaration** in accordance with ITP 20;
- (c) **Alternative Proposal- Technical Part:** if permissible, in accordance with ITP 13, the Technical Part of any Alternative Proposal;
- (d) **Authorization:** written confirmation authorizing the signatory of the Proposal to commit the Proposer, in accordance with ITP 21.3;
- (e) **Eligibility of Information System:** documentary evidence established in accordance with ITP 14.1 that the Information System offered by the Proposer in its Proposal or in any alternative Proposal, if permitted, are eligible;
- (f) **Proposer’s Eligibility and qualifications:** documentary evidence in accordance with ITP 15 establishing the Proposer’s eligibility and qualifications to perform the contract if its Proposal is accepted;
- (g) **Conformity:** documentary evidence established in accordance with ITP 16 that the Information System offered by the Proposer conform to the **request for proposals** document;
- (h) **Subcontractors:** list of subcontractors, in accordance with ITP 16.4;
- (i) **Intellectual Property:** a list of: Intellectual Property as defined in GCC Clause 15;
  - (i) all Software included in the Proposal, assigning each item to one of the software categories defined in GCC Clause 1.1 (c):
    - a. System, General Purpose, and Application Software;  
or
    - b. Standard and Custom Software;
  - (ii) all Custom Materials, as defined in GCC Clause 1.1 (c), included in the Proposal;

All Materials not identified as Custom Materials shall be deemed Standard Materials, as defined in GCC Clause 1.1 (c);

Re-assignments among the Software and Materials categories, if necessary, will be made during the implementation of the Contract according to GCC Clause 39 (Changes to the Information System); and

- (j) any other document required in the PDS.

**11.3. The Financial Part shall contain the following:**

- (a) Letter of Proposal – Financial Part: prepared in accordance with ITP 12 and ITP 17;
- (b) Schedule: Price Schedules completed in accordance with ITP 12 and ITP 17;
- (c) Alternative Proposal - Financial Part: if permissible in accordance with ITP 13, the Financial Part of any Alternative Proposal; and
- (d) any other document required in the PDS.

11.4. The Technical Part shall not include any information related to the Proposal price. Where material financial information related to the Proposal price is contained in the Technical Part the Proposal shall be declared non-responsive.

11.5. In addition to the requirements under ITP 11.2, Proposals submitted by a JV shall include in the Technical Part a copy of the Joint Venture Agreement entered into by all members indicating at least the parts of the Information System to be executed by the respective members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful Proposal shall be signed by all members and submitted with the Proposal, together with a copy of the proposed Agreement indicating at least the parts of the Information System to be executed by the respective members.

11.6. The Proposer shall furnish in the Letter of Proposal - Financial Part information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this procurement process.

**12. Letters of Proposal and Price Schedules**

12.1. The Letter of Proposal - Technical Part, Letter of Proposal-Financial Part and Price Schedules shall be prepared using the relevant forms furnished in Section IV, Proposal Forms. The forms must be completed without any alterations to the text, and no

substitutes shall be accepted except as provided under ITP 21.3. All blank spaces shall be filled in with the information requested.

**13. Alternative Proposals**

- 13.1. The PDS indicates whether alternative Proposals are allowed. If they are allowed, the PDS will also indicate whether they are permitted in accordance with ITP 13.3, or invited in accordance with ITP 13.2 and/or ITP 13.4.
- 13.2. When alternatives to the Time Schedule are explicitly invited, a statement to that effect will be included in the PDS, and the method of evaluating different time schedules will be described in Section III, Evaluation and Qualification Criteria.
- 13.3. Except as provided under ITP 13.4 below, Proposers wishing to offer technical alternatives to the Purchaser's requirements as described in the request for proposals document must also provide: (i) a price at which they are prepared to offer an Information System meeting the Purchaser's requirements; and (ii) all information necessary for a complete evaluation of the alternatives by the Purchaser, including drawings, design calculations, technical specifications, breakdown of prices, and proposed installation methodology and other relevant details. Only the technical alternatives, if any, of the Proposer with the Most Advantageous Proposal conforming to the basic technical requirements shall be considered by the Purchaser.
- 13.4. When Proposers are invited in the PDS to submit alternative technical solutions for specified parts of the system, such parts shall be described in Section VII, Purchaser's Requirements. Technical alternatives that comply with the performance and technical criteria specified for the Information System shall be considered by the Purchaser on their own merits, pursuant to ITP 32.

**14. Documents Establishing the Eligibility of the Information System**

- 14.1. To establish the eligibility of the Information System in accordance with ITP 5, Proposers shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Proposal Forms.

**15. Documents Establishing the Eligibility and Qualifications of the Proposer**

- 15.1. To establish its eligibility and qualifications to perform the Contract in accordance with Section III, Evaluation and Qualification Criteria, the Proposer shall provide the information requested in the corresponding information sheets included in Section IV, Proposal Forms.
- 15.2. In the event that prequalification of potential Proposers has been undertaken as stated in the PDS, only Proposals from prequalified

Proposers shall be considered for award of Contract. These qualified Proposers should submit with their Proposals any information updating their original prequalification applications or, alternatively, confirm in their Proposals that the originally submitted prequalification information remains essentially correct as of the date of Proposal submission.

- 15.3. Any change in the structure or formation of a Proposer after being prequalified and invited to submit Proposals, if applicable, (including, in the case of a JV, any change in the structure or formation of any member and also including any change in any specialized subcontractor whose qualifications were considered to prequalify the Applicant) shall be subject to the written approval of the Purchaser prior to the deadline for submission of Proposals. Such approval shall be denied if (i) a Proposer proposes to associate with a disqualified Proposer or in case of a disqualified joint venture, any of its members; (ii) as a consequence of the change, the Proposer no longer substantially meets the qualification criteria; or (iii) in the opinion of the Purchaser, the change may result in a substantial reduction in competition. Any such change should be submitted to the Purchaser not later than fourteen (14) days after the date of the notice for RFP sent to the prequalified Proposers.

**16. Documents  
Establishing  
Conformity of  
the  
Information  
System**

- 16.1. Pursuant to ITP 11.2 (g), the Proposer shall furnish, as part of its Proposal, documents establishing the conformity to the request for proposals documents of the Information System that the Proposer proposes to design, supply and install under the Contract.
- 16.2. The documentary evidence of conformity of the Information System to the request for proposals documents including:
- (a) Preliminary Project Plan describing, among other things, the methods by which the Proposer will carry out its overall management and coordination responsibilities if awarded the Contract, and the human and other resources the Proposer proposes to use. The Preliminary Project Plan must also address any other topics specified in the PDS. In addition, the Preliminary Project Plan should state the Proposer's assessment of what it expects the Purchaser and any other party involved in the implementation of the Information System to provide during implementation and how the Proposer proposes to coordinate the activities of all involved parties;
  - (b) written confirmation that the Proposer accepts responsibility for the successful integration and inter-operability of all

components of the Information System as required by the request for proposals documents;

- (c) an item-by-item commentary on the Purchaser's Technical Requirements, demonstrating the substantial responsiveness of the Information System offered to those requirements. In demonstrating responsiveness, the Proposer should use the Technical Responsiveness Checklist (or Checklist Format) in the Sample Proposal Forms (Section IV). The commentary shall include explicit cross-references to the relevant pages in the supporting materials included in the Proposal. Whenever a discrepancy arises between the item-by-item commentary and any catalogs, technical specifications, or other preprinted materials submitted with the Proposal, the item-by-item commentary shall prevail;
  - (d) support material (e.g., product literature, white papers, narrative descriptions of technologies and/or technical approaches), as required and appropriate; and
  - (e) any separate and enforceable contract(s) for Recurrent Cost items which the PDS ITP 17.2 requires Proposers to propose.
- 16.3. References to brand names or model numbers or national or proprietary standards designated by the Purchaser in the request for proposals documents are intended to be descriptive and not restrictive. Except as specified in the PDS for specific items or standards, the Proposer may substitute alternative brand/model names or standards in its Proposal, provided that it demonstrates to the Purchaser's satisfaction that the use of the substitute(s) will result in the Information System being able to perform substantially equivalent to or better than that specified in the Technical Requirements.
- 16.4. For major items of the Information System as listed by the Purchaser in Section III, Evaluation and Qualification Criteria, which the Proposer intends to purchase or subcontract, the Proposer shall give details of the name and nationality of the proposed subcontractors, including manufacturers, for each of those items. In addition, the Proposer shall include in its Proposal information establishing compliance with the requirements specified by the Purchaser for these items. Quoted rates and prices will be deemed to apply to whichever subcontractor is appointed, and no adjustment of the rates and prices will be permitted.
- 16.5. The Proposer shall be responsible for ensuring that any subcontractor proposed complies with the requirements of ITP 4, and that any goods or services to be provided by the subcontractor comply with the requirements of ITP 5 and ITP 16.1.

- 17. Proposal Prices**
- 17.1. All Goods and Services identified in the Supply and Installation Cost Sub-Tables in System Inventory Tables in Section VII, and all other Goods and Services proposed by the Proposer to fulfill the requirements of the Information System, must be priced separately and summarized in the corresponding cost tables in the Sample Proposal Forms (Section IV), in accordance with the instructions provided in the tables and in the manner specified below.
- 17.2. Unless otherwise specified in the PDS, the Proposer must also propose Recurrent Cost Items specified in the Technical Requirements, Recurrent Cost Sub-Table of the System Inventory Tables in Section VII (if any). These must be priced separately and summarized in the corresponding cost tables in the Sample Proposal Forms (Section IV), in accordance with the instructions provided in the tables and in the manner specified below:
- (a) if specified **in the PDS**, the Proposer must also propose separate enforceable contracts for the Recurrent Cost Items not included in the main Contract;
  - (b) prices for Recurrent Costs are all-inclusive of the costs of necessary Goods such as spare parts, software license renewals, labor, etc., needed for the continued and proper operation of the Information System and, if appropriate, of the Proposer's own allowance for price increases;
  - (c) prices for Recurrent Costs beyond the scope of warranty services to be incurred during the Warranty Period, defined in GCC Clause 29.4 and prices for Recurrent Costs to be incurred during the Post-Warranty Period, defined in SCC Clause 1.1. (e) (xiii), shall be quoted as Service prices on the Recurrent Cost Sub-Table in detail, and on the Recurrent Cost Summary Table in currency totals.
- 17.3. Unit prices must be quoted at a level of detail appropriate for calculation of any partial deliveries or partial payments under the contract, in accordance with the Implementation Schedule in Section VII), and with GCC and SCC Clause 12 – Terms of Payment. Proposers may be required to provide a breakdown of any composite or lump-sum items included in the Cost Tables
- 17.4. The price of items that the Proposer has left blank in the cost tables provided in the Sample Proposal Forms (Section IV) shall be assumed to be included in the price of other items. Items omitted altogether from the cost tables shall be assumed to be omitted from the Proposal and, provided that the Proposal is substantially

responsive, an adjustment to the Proposal price will be made during Proposal evaluation in accordance with ITP 34.1.

- 17.5. The prices for Goods components of the Information System are to be expressed and shall be defined and governed in accordance with the rules prescribed in the edition of Incoterms specified in the PDS, as follows:

- (a) Goods supplied from outside the Purchaser's country:

Unless otherwise specified **in the PDS**, the prices shall be quoted on a CIP (named place of destination) basis, exclusive of all taxes, stamps, duties, levies, and fees imposed in the Purchaser's country. The named place of destination and special instructions for the contract of carriage are as specified in the SCC for GCC 1.1 (e) (iii). In quoting the price, the Proposer shall be free to use transportation through carriers registered in any eligible countries. Similarly, the Proposer may obtain insurance services from any eligible source country;

- (b) Locally supplied Goods:

Unit prices of Goods offered from within the Purchaser's Country, shall be quoted on an EXW (ex factory, ex works, ex warehouse or off-the-shelf, as applicable) basis, including all customs duties, levies, fees, sales and other taxes incurred until delivery of the Goods, but excluding all VAT or sales and other taxes and duties/fees incurred for the Goods at the time of invoicing or sales transaction, if the Contract is awarded;

- (c) Inland transportation.

- 17.6. Unless otherwise stated in the PDS, inland transportation, insurance and related local costs incidental to the delivery of the Goods to the designated Project Sites must be quoted separately as a Service item in accordance with ITP 17.5, whether the Goods are to be supplied locally or from outside the Purchaser's country, except when these costs are already included in the price of the Goods, as is, e.g., the case, when ITP 17.5 (a) specifies CIP, and the named places of destination are the Project Sites.

- 17.7. The price of Services shall be separated into their local and foreign currency components and where appropriate, broken down into unit prices. Prices must include all taxes, duties, levies and fees whatsoever, except only VAT or other indirect taxes, or stamp duties, that may be assessed and/or apply in the Purchaser's country on/to the price of the Services invoiced to the Purchaser, if the Contract is awarded.

- 17.8. Unless otherwise specified in the PDS, the prices must include all costs incidental to the performance of the Services, as incurred by the Supplier, such as travel, subsistence, office support, communications, translation, printing of materials, etc. Costs incidental to the delivery of the Services but incurred by the Purchaser or its staff, or by third parties, must be included in the price only to the extent such obligations are made explicit in these request for proposals documents (as, e.g., a requirement for the Proposer to include the travel and subsistence costs of trainees).
- 17.9. Unless otherwise specified in the PDS, prices quoted by the Proposer shall be fixed during the Proposer's performance of the Contract and not subject to increases on any account. Proposals submitted that are subject to price adjustment will be rejected.
- 18. Currencies of Proposal and Payment**
- 18.1. The currency(ies) of the Proposal and currencies of payment shall be the same. The Proposer shall quote in the currency of the Purchaser's Country the portion of the Proposal price that corresponds to expenditures incurred in the currency of the Purchaser's Country, unless otherwise specified in the PDS.
- 18.2. The Proposer may express the Proposal price in any currency. If the Proposer wishes to be paid in a combination of amounts in different currencies, it may quote its price accordingly but shall use no more than three foreign currencies in addition to the currency of the Purchaser's Country.
- 19. Period of Validity of Proposals**
- 19.1. Proposals shall remain valid until the date specified in the PDS or any extended date if amended by the Purchaser in accordance with ITP 8. A Proposal that is not valid until the date specified in the PDS, or any extended date if amended by the Purchaser in accordance with ITP 8, shall be rejected by the Purchaser as nonresponsive.
- 19.2. In exceptional circumstances, prior to the date of expiry of the Proposal validity, the Purchaser may request Proposers to extend the date of validity until a specified date. The request and the responses shall be made in writing. If a Proposal Security is requested in accordance with ITP 20, it shall also be extended for twenty-eight days (28) beyond the deadline of the extended validity period. A Proposer may refuse the request without forfeiting its Proposal Security. A Proposer granting the request shall not be required or permitted to modify its Proposal, except as provided in ITP 19.3.
- 19.3. If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial Proposal validity specified in

accordance with ITP 19.1, the Contract price shall be determined as follows:

- (a) in case of fixed price contracts, the contract price shall be the Proposal price adjusted by a factor or factors specified **in the PDS**;
- (b) in the case of an adjustable price contracts, no adjustments shall be made;
- (c) in any case, Proposal evaluation shall be based on the Proposal Price without taking into consideration the applicable correction from those indicated above.

## **20. Proposal Security**

- 20.1. The Proposer shall furnish as part of the Technical Part of its Proposal, either a Proposal-Securing Declaration or a Proposal Security as specified in the PDS, in original form and, in the case of a Proposal Security, in the amount and currency specified in the PDS.
- 20.2. A Proposal-Securing Declaration shall use the form included in Section IV, Proposal Forms.
- 20.3. If a Proposal Security is specified pursuant to ITP 20.1, the Proposal security shall be a demand guarantee in any of the following forms at the Proposer's option:
  - (a) an unconditional guarantee issued by a non-bank financial institution (such as an insurance, bonding or surety company);
  - (b) an irrevocable letter of credit;
  - (c) a cashier's or certified check; or
  - (d) another security indicated **in the PDS**,

from a reputable source from an eligible country. If an unconditional guarantee is issued by a non-bank financial institution located outside the Purchaser's Country the issuing non-bank financial institution shall have a correspondent financial institution located in the Purchaser's Country to make it enforceable unless the Purchaser has agreed in writing, prior to Proposal submission, that a correspondent financial institution is not required. In the case of a bank guarantee, the Proposal Security shall be submitted either using the Proposal Security Form included in Section IV, Proposal Forms or in another substantially similar format approved by the Purchaser prior to Proposal submission. In either case, the form must include the complete name of the Proposer. The Proposal Security shall be valid for twenty-eight (28) days beyond the original date of expiry of the Proposal validity, or beyond any extended date if requested under ITP 19.2.

- 20.4. If a Proposal Security or a Proposal-Securing Declaration is specified pursuant to ITP 20.1, any Proposal not accompanied by a substantially responsive Proposal Security or Proposal-Securing Declaration shall be rejected by the Purchaser as non-responsive.
- 20.5. If a Proposal Security is specified pursuant to ITP 20.1, the Proposal Security of unsuccessful Proposers shall be returned as promptly as possible upon the successful Proposer's furnishing of the Performance Security pursuant to ITP 48.
- 20.6. The Proposal Security of the successful Proposer shall be returned as promptly as possible once the successful Proposer has signed the Contract and furnished the required Performance Security.
- 20.7. The Proposal Security may be forfeited:
  - (a) if a Proposer withdraws its Proposal prior to the expiry date of Proposal validity specified by the Proposer on the Letter of Proposal or any extended date provided by the Proposer; or
  - (b) if the successful Proposer fails to:
    - (i) sign the Contract in accordance with ITP 47; or
    - (ii) furnish a performance security in accordance with ITP 48.

20.8. The Proposal Security or the Proposal-Securing Declaration of a JV shall be in the name of the JV that submits the Proposal. If the JV has not been legally constituted into a legally enforceable JV at the time of submission of Proposals, the Proposal Security or the Proposal-Securing Declaration shall be in the names of all future members as named in the letter of intent referred to in ITP 4.1 and ITP 11.5.

20.9. If a Proposal Security is not required in the PDS, and;

- (a) if a Proposer withdraws its Proposal prior to the expiry date of the Proposal validity specified by the Proposer on the Letter of Proposal, or any extended date provided by the Proposer; or
- (b) if the successful Proposer fails to: sign the Contract in accordance with ITP 47; or furnish a Performance Security in accordance with ITP 48;

the Purchaser may, if provided for **in the PDS**, declare the Proposer disqualified to be awarded a contract by the Purchaser for a period of time as stated **in the PDS**.

## **21. Format and Signing of Proposal**

21.1. The Proposer shall prepare one original and copies/sets of the documents comprising the Proposal as described in ITP 11 and Proposer22.

21.2. Proposers shall mark as “CONFIDENTIAL” information in their Proposals which is confidential to their business. This may include proprietary information, trade secrets, or commercial or financially sensitive information.

21.3. The original and all copies of the Proposal shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Proposer. This authorization shall consist of a written confirmation as specified in the PDS and shall be attached to the Proposal. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Proposal where entries or amendments have been made shall be signed or initialed by the person signing the Proposal.

- 21.4. In case the Proposer is a JV, the Proposal shall be signed by an authorized representative of the JV on behalf of the JV, and so as to be legally binding on all the members as evidenced by a power of attorney signed by their legally authorized representatives.
- 21.5. Any interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Proposal.

## **D. SUBMISSION OF PROPOSALS**

### **22. Submission, Sealing and Marking of Proposals**

- 22.1. The Proposer shall deliver the Proposal in two separate, sealed envelopes (the Technical Part and the Financial Part). These two envelopes shall be enclosed in a separate sealed outer envelope marked “Original PROPOSAL”. In addition, the Proposer shall submit copies of the Proposal in the number specified in the PDS. Copies of the Technical Part shall be placed in a separate sealed envelope marked “COPIES: TECHNICAL PART”. Copies of the Financial Part shall be placed in a separate sealed envelope marked “COPIES: FINANCIAL PART”. The Proposer shall place both of these envelopes in a separate, sealed outer envelope marked “PROPOSAL COPIES”. In the event of any discrepancy between the original and the copies, the original shall prevail.
- 22.2. If alternative Proposals are permitted in accordance with ITP 14, the alternative Proposals shall be submitted as follows: the original of the alternative Proposal Technical Part shall be placed in a sealed envelope marked “ALTERNATIVE PROPOSAL – TECHNICAL PART” and the Financial Part shall be placed in a sealed envelope marked “ALTERNATIVE PROPOSAL – FINANCIAL PART” and these two separate sealed envelopes then enclosed within a sealed outer envelope marked “ALTERNATIVE PROPOSAL – ORIGINAL”, the copies of the alternative Proposal will be placed in separate sealed envelopes marked “ALTERNATIVE PROPOSAL – COPIES OF TECHNICAL PART”, and “ALTERNATIVE PROPOSAL – COPIES OF FINANCIAL PART” and enclosed in a separate sealed outer envelope marked “ALTERNATIVE PROPOSAL - COPIES.
- 22.3. The envelopes marked “ORIGINAL PROPOSAL” and “PROPOSAL COPIES” (and, if appropriate, a third envelope marked “ALTERNATIVE PROPOSAL”) shall be enclosed in a separate sealed outer envelope for submission to the Purchaser.
- 22.4. The inner and outer envelopes shall:
  - (a) bear the name and address of the Proposer;
  - (b) be addressed to the Purchaser in accordance with ITP 23.1;

- (c) bear the specific identification of this request for proposals process indicated in accordance with ITP 1.1; and
  - (d) bear a warning not to open before the time and date for Proposal opening.
- 22.5. If all envelopes are not sealed and marked as required, the Purchaser will assume no responsibility for the misplacement or premature opening of the Proposal.
- 23. Deadline for Submission of Proposals**
  - 23.1. Proposals must be received by the Purchaser at the address and no later than the date and time indicated in the PDS. When so specified in the PDS, Proposers shall have the option of submitting their Proposals electronically. Proposers submitting Proposals electronically shall follow the electronic Proposal submission procedures specified in the PDS.
  - 23.2. The Purchaser may, at its discretion, extend this deadline for submission of Proposals by amending the request for proposals documents in accordance with ITP 8, in which case all rights and obligations of the Purchaser and Proposers will thereafter be subject to the deadline as extended.
- 24. Late Proposals**
  - 24.1. The Purchaser shall not consider any Proposal that arrives after the deadline for submission of Proposals, in accordance with ITP 23. Any Proposal received by the Purchaser after the deadline for submission of Proposals shall be declared late, rejected, and returned unopened to the Proposer.
- 25. Withdrawal, Substitution, and Modification of Proposals**
  - 25.1. A Proposer may withdraw, substitute, or modify its Proposal after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITP 21.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Proposal must accompany the respective written notice. All notices must be:
    - (a) prepared and submitted in accordance with ITP 21 and ITP 22 (except that withdrawals notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION;” and
    - (b) received by the Purchaser prior to the deadline prescribed for submission of Proposals, in accordance with ITP 23.

- 25.2. Proposals requested to be withdrawn in accordance with ITP 25.1 shall be returned unopened to the Proposers.

No Proposal may be withdrawn, substituted, or modified in the interval between the deadline for submission of Proposals and the date of expiry of the Proposal validity specified by the Proposer on the Letter of Proposal or any extended date thereof.

## **E. PUBLIC OPENING OF TECHNICAL PARTS OF PROPOSALS**

### **26. Public Opening of Technical Parts of Proposals**

- 26.1. Except as in the cases specified in ITP 24 and ITP 25.2, the Purchaser shall conduct the Proposal opening in public, in the presence of Proposers' designated representatives and anyone who chooses to attend, and at the address, date and time specified in the PDS. Any specific electronic Proposal opening procedures required if electronic submission of proposals is permitted in accordance with ITP 23.1, shall be as specified in the PDS.
- 26.2. First, envelopes marked "Withdrawal" shall be opened and read out and the envelope with the corresponding Proposal shall not be opened but returned to the Proposer. No Proposal withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Proposal opening.
- 26.3. Next, envelopes marked "Substitution" shall be opened and read out and exchanged with the corresponding Proposal being substituted, and the substituted Proposal shall not be opened, but returned to the Proposer. No Proposal substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Proposal opening.
- 26.4. Envelopes marked "Modification" shall be opened and read out with the corresponding Proposal. No Proposal modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Proposal opening. Only Proposals that are opened and read out at Proposal opening shall be considered further.
- 26.5. Next, all other envelopes marked "Technical Part" shall be opened one at a time. All envelopes marked "Second Envelope: Financial Part" shall remain sealed and kept by the Purchaser in safe custody until they are opened at a later public opening, following the evaluation of the Technical Part parts of the Proposals. On opening the envelopes marked "Technical Part" the Purchaser shall read out: the name of the Proposer, the presence or the absence of a Proposal Security, or Proposal-Securing Declaration,

if required, and whether there is a modification; and Alternative Proposal - Technical Part; and any other details as the Purchaser may consider appropriate.

- 26.6. Only Technical Parts of Proposals and Alternative Proposal - Technical Parts that are read out at Proposal opening shall be considered further for evaluation. The Letter of Proposal-Technical Part and the separate sealed envelope marked “Second Envelope: Financial Part” are to be initialed by representatives of the Purchaser attending Proposal opening in the manner specified in the PDS.
- 26.7. The Purchaser shall neither discuss the merits of any Proposal nor reject any Proposal (except for late Proposals, in accordance with ITP 24.1).
- 26.8. The Purchaser shall prepare a record of the Proposal opening that shall include, as a minimum:
  - (a) the name of the Proposer and whether there is a withdrawal, substitution, or modification;
  - (b) any alternative Proposals; and
  - (c) the presence or absence of a Proposal Security or a Proposal-Securing Declaration.
- 26.9. The Proposers’ representatives who are present shall be requested to sign the record. The omission of a Proposer’s signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Proposers.

## **F. EVALUATION OF PROPOSALS- GENERAL PROVISIONS**

- 27. Confidentiality**
  - 27.1. Information relating to the evaluation of the Technical Part shall not be disclosed to Proposers or any other persons not officially concerned with the procurement process until the notification of evaluation of the Technical Part in accordance with ITP 33. Information relating to the evaluation of Financial Part, the evaluation of combined Technical Part and Financial Part, and recommendation of contract award shall not be disclosed to Proposers or any other persons not officially concerned with the RFP process until the Notification of Intention to Award the Contract is transmitted to Proposers in accordance with ITP 42ProposerProposer.
  - 27.2. Any effort by a Proposer to influence the Purchaser in the evaluation of the Proposals or Contract award decisions may result in the rejection of its Proposal.

- 27.3. Notwithstanding ITP 27.2, from the time of Proposal opening to the time of Contract award, if any Proposer wishes to contact the Purchaser on any matter related to the procurement process, it should do so in writing.

**28. Clarification of Proposals**

- 28.1. To assist in the examination, evaluation, and comparison of the Proposals, and qualification of the Proposers, the Purchaser may, at its discretion, ask any Proposer for a clarification of its Proposal. Any clarification submitted by a Proposer that is not in response to a request by the Purchaser shall not be considered. The Purchaser's request for clarification and the response shall be in writing. No change in the prices or substance of the Proposal shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Purchaser in the evaluation of the Proposals, in accordance with ITP 35.
- 28.2. If a Proposer does not provide clarifications of its Proposal by the date and time set in the Purchaser's request for clarification, its Proposal may be rejected.

**29. Deviations, Reservations, and Omissions**

- 29.1. During the evaluation of Proposals, the following definitions apply:
- (a) "Deviation" is a departure from the requirements specified in the request for proposals document;
  - (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the request for proposals document; and
  - (c) "Omission" is the failure to submit part or all of the information or documentation required in the request for proposals document.
- 29.2. Provided that a Proposal is substantially responsive, the Purchaser may waive any nonmaterial nonconformities in the Proposal.
- Provided that a Proposal is substantially responsive, the Purchaser may request that the Proposer submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Proposal related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Proposal. Failure of the Proposer to comply with the request may result in the rejection of its Proposal.

## **G. EVALUATION OF TECHNICAL PART OF PROPOSALS**

### **30. Determination of Responsiveness**

- 30.1. The Purchaser's determination of the Technical Part's responsiveness shall be based on the contents of the Proposal, as specified in ITP 11.
- 30.2. Preliminary examination of the Technical Part shall be carried out to identify proposals that are incomplete, invalid or substantially nonresponsive to the requirements of the request for proposals documents. A substantially responsive Proposal is one that materially confirms to the requirements of the request for proposals document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,
- (a) if accepted, would:
    - (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
    - (ii) limit in any substantial way, inconsistent with the request for proposals document, the Purchaser's rights or the Proposer's obligations under the proposed Contract; or
    - (iii) limit in any substantial way, inconsistent with the request for proposals document, the Purchaser's rights or the Proposer's obligations under the proposed Contract; or
  - (b) if rectified, would unfairly affect the competitive position of other Proposers presenting substantially responsive Proposals.
- 30.3. If the Technical Part is not substantially responsive to the requirements of the request for proposals document, it shall be rejected by the Purchaser and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

### **31. Eligibility and Qualifications of the Proposer**

- 31.1. The Purchaser shall determine to its satisfaction whether the Proposers that have been assessed to have submitted substantially responsive Proposals are eligible, and either continue to meet (if prequalification applies) or meet (if prequalification has not been carried out), the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.
- 31.2. The determination shall be based upon an examination of the documentary evidence of the Proposer's eligibility and

qualifications submitted by the Proposer, pursuant to ITP 15. The determination shall not take into consideration the qualifications of other firms such as the Proposer's subsidiaries, parent entities, affiliates, subcontractors (other than Specialized Subcontractors if permitted in the request for proposals document), or any other firm.

- 31.3. Prior to Contract award, the Purchaser will verify that the successful Proposer (including each member of a JV) is not disqualified by the Bank due to noncompliance with contractual SEA/SH prevention and response obligations. The Purchaser will conduct the same verification for each subcontractor proposed by the successful Proposer. If any proposed subcontractor does not meet the requirement, the Purchaser will require the Proposer to propose a replacement subcontractor.
- 31.4. Only substantially responsive Proposals submitted by eligible and qualified Proposers shall proceed to the detailed technical evaluation specified in ITP 32.
- 31.5. The Purchaser's evaluation of Technical Part will be carried out as specified in Section III, Evaluation and Qualification Criteria.

**32. Detailed  
Evaluation of  
Technical Part**

- 32.1. The scores and weightings to be given to Rated Criteria (including technical and non-price factors and sub factors) are specified in the PDS.

## **H. NOTIFICATION OF EVALUATION OF TECHNICAL PARTS AND PUBLIC OPENING OF FINANCIAL PARTS**

**33. Notification of  
Evaluation of  
Technical Parts  
and Public  
Opening of  
Financial Parts**

- 33.1. Following the completion of the evaluation of the Technical Parts of the Proposals, the Purchaser shall notify in writing those Proposers whose Proposals were considered substantially non-responsive to the request for proposals document or failed to meet the eligibility and qualification requirements, advising them of the following information:
  - (a) the grounds on which their Technical Part of Proposal failed to meet the requirements of the request for proposals document;
  - (b) their envelopes marked "SECOND ENVELOPE: FINANCIAL PART" will be returned to them unopened after the completion of the selection process and the signing of the Contract; and

- (c) Option 1: when BAFO or negotiations is not to be applied notify them of the date, time and location of the public opening of the envelopes marked ‘Financial Part’, or;

**Option 2: when BAFO or negotiations apply as specified in the PDS**, notify them that: (i) the envelopes marked ‘Financial Part’ will not be opened in public, but in the presence of a probity auditor appointed by the Purchaser, and that (ii) the announcement of the names of the Proposers whose Financial Parts will be opened and the total Proposal prices will be deferred to the time that the Notification of Intention to Award the contract is issued.

- 33.2. The Purchaser shall, simultaneously, notify in writing those Proposers whose Technical Part have been evaluated as substantially responsive to the request for proposals document and met the eligibility and qualification requirements, advising them of the following information:
- 33.3. their Proposal has been evaluated as substantially responsive to the request for proposals document and met the eligibility and qualification requirements;
- 33.4. Option 1: when BAFO or negotiations is not to be applied notify them of the date, time and location of the public opening of the envelopes marked ‘Financial Part’, or;

Option 2: when BAFO or negotiations apply as specified in the PDS, notify them that: (i) the envelopes marked ‘Financial Part’ will not be opened in public, but in the presence of a probity auditor appointed by the Purchaser, and that (ii) the announcement of the names of the Proposers whose Financial Parts will be opened and the total Proposal prices will be deferred to the time that the Notification of Intention to Award the contract is issued.

- 33.5. When BAFO or negotiations do not apply as specified in the PDS, the Financial Part of the Proposal shall be opened publicly in the presence of Proposers’ designated representatives and anyone who chooses to attend.
- 33.6. The opening date shall be not less than ten (10) Business Days from the date of notification of the results of the technical evaluation, specified in ITP 33.1 and 33.2. However, if the Purchaser receives a complaint on the results of the technical evaluation within the ten (10) Business Days, the opening date shall be subject to ITP 50.1.

- 33.7. At this public opening, the Financial Parts will be opened by the Purchaser in the presence of Proposers, or their designated representatives and anyone else who chooses to attend. Proposers who met the eligibility and qualification requirements and whose Proposals were evaluated as substantially responsive will have their envelopes marked “SECOND ENVELOPE: FINANCIAL PART” opened at the second public opening. Each of these envelopes marked “SECOND ENVELOPE: FINANCIAL PART” shall be inspected to confirm that they have remained sealed and unopened. These envelopes shall then be opened by the Purchaser. The Purchaser shall read out the names of each Proposer, the technical score and the total Proposal prices, per lot (contract) if applicable, including any discounts and Alternative Proposal - Financial Part, and any other details as the Purchaser may consider appropriate.
- 33.8. Only envelopes of Financial Part of Proposals, Financial Parts of Alternative Proposals and discounts that are opened and read out at Proposal opening shall be considered further for evaluation. The Letter of Proposal – Financial Part and the Price Schedules are to be initialed by a representative of the Purchaser attending the Proposal opening in the manner specified in the PDS.
- 33.9. The Purchaser shall neither discuss the merits of any Proposal nor reject any envelopes marked “SECOND ENVELOPE: FINANCIAL PART” at this public opening.
- 33.10. The Purchaser shall prepare a record of the Financial Part of the Proposal opening that shall include, as a minimum: (a) the name of the Proposer whose Financial Part was opened; (b) the Proposal price, per lot (contract) if applicable, including any discounts; and (c) if applicable, any Alternative Proposal – Financial Part.
- 33.11. The Proposers whose envelopes marked “SECOND ENVELOPE: FINANCIAL PART” have been opened or their representatives who are present shall be requested to sign the record. The omission of a Proposer’s signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Proposers.
- 33.12. When, as specified in the PDS, BAFO or negotiations apply the Financial Parts will not be opened in public and will be opened in the presence of a probity auditor appointed by the Purchaser.
- 33.13. At the opening each of the envelopes marked “Financial Part” shall be inspected to confirm that they have remained sealed and unopened. These envelopes shall then be opened by the Purchaser. The Purchaser shall record the names of each Proposer, and the total Proposal prices and any other details as the Purchaser may consider appropriate. The Letter of Proposal - Financial Part and

the Price Schedules are to be initialed by a representative of the Purchaser attending the opening and by the probity auditor.

33.14. The Purchaser shall prepare a record of the opening of the Financial Part envelopes that shall include, as a minimum:

- (a) the name of the Proposers whose Financial Part was opened;
- (b) the Proposal prices including any discounts. and
- (c) The Probity Auditor's report of the opening of the Financial Part.

33.15. The probity auditor shall sign the record. The contents of the envelopes marked 'Financial Part' and the record of the opening shall be kept in safe custody by the Purchaser and not disclosed to anyone until the time of the transmission of the Notification of Intention to Award the contract.

## **I. EVALUATION OF FINANCIAL PART OF PROPOSALS**

### **34. Adjustments for Non-material Nonconformities**

34.1. Provided that a Proposal is substantially responsive, the Purchaser shall rectify quantifiable nonmaterial nonconformities related to the Proposal Price. To this effect, the Proposal Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component by adding the average price of the item or component quoted by substantially responsive Proposers. If the price of the item or component cannot be derived from the price of other substantially responsive Proposers, the Purchaser shall use its best estimate.

### **35. Correction of Arithmetic Errors**

35.1. In evaluating the Financial Part of each Proposal, the Purchaser shall correct arithmetical errors on the following basis:

- (a) where there are errors between the total of the amounts given under the column for the price breakdown and the amount given under the Total Price, the former shall prevail and the latter will be corrected accordingly;
- (b) where there are errors between the total of the amounts of Schedule Nos. 1 to 5 and the amount given in Schedule No. 6 (Grand Summary), the former shall prevail and the latter will be corrected accordingly; and
- (c) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a) and (b) above.

35.2. Proposers shall be requested to accept correction of arithmetical errors. Failure to accept the correction in accordance with ITP 35.1, shall result in the rejection of the Proposal.

**36. Evaluation of  
Proposals  
Financial Part**

36.1. To evaluate the Financial Part, the Purchaser shall consider the following:

- (a) the Proposal price, excluding provisional sums and the provision, if any, for contingencies in the Price Schedules;
- (b) price adjustment for correction of arithmetic errors in accordance with ITP 35.1;
- (c) price adjustment due to discounts offered in accordance with ITP 26;
- (d) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITP 34.1;
- (e) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITP 36.2; and
- (f) the evaluation factors indicated in the PDS and detailed in Section III, Evaluation and Qualification Criteria.

36.2. For evaluation and comparison purposes, the currency(ies) of the **Proposal** shall be converted into a single currency **as specified in the PDS**.

36.3. No margin of domestic preference shall apply.

36.4. If price adjustment is allowed in accordance with ITP 17.7, the estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in Proposal evaluation.

36.5. If this request for proposals document allows Proposers to quote separate prices for different lots (contracts), each lot will be evaluated separately to determine the Most Advantageous Proposal using the methodology specified in Section III, Evaluation and Qualification Criteria. Discounts that are conditional on the award of more than one lot or slice shall not be considered for Proposal evaluation.

36.6. The Purchaser will evaluate and compare the Proposals. The evaluation will be performed assuming either that:

- (a) the Contract will be awarded to the Most Advantageous Proposal for the entire Information System; or
- (b) if specified **in the PDS**, Contracts will be awarded to the Proposers for each individual Subsystem, lot, or slice defined in the Technical Requirements whose Proposals result in the Most Advantageous Proposal/Proposals for the entire System.

In the latter case, discounts that are conditional on the award of more than one Subsystem, lot, or slice may be offered in Proposals. Such discounts will be considered in the evaluation of Proposals as specified **in the PDS**.

**37. Abnormally Low Proposals**

- 37.1. An Abnormally Low Proposal is one where the Proposal price in combination with other constituent elements of the Proposal appears unreasonably low to the extent that the Proposal price raises material concerns as to the capability of the Proposer to perform the Contract for the offered Proposal Price.
- 37.2. In the event of identification of a potentially Abnormally Low Proposal, the Purchaser shall seek written clarifications from the Proposer, including detailed price analyses of its Proposal price in relation to the subject matter of the contract, scope, proposed methodology, schedule, allocation of risks and responsibilities and any other requirements of the request for proposals document.
- 37.3. After evaluation of the price analyses, in the event that the Purchaser determines that the Proposer has failed to demonstrate its capability to perform the Contract for the offered Proposal Price, the Purchaser shall reject the Proposal.

**38. Unbalanced or Front Loaded Proposals**

- 38.1. If the Proposal that is evaluated as the lowest evaluated cost is, in the Purchaser's opinion, seriously unbalanced or front loaded the Purchaser may require the Proposer to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Proposal prices with the scope of information systems, installations, proposed methodology, schedule and any other requirements of the request for proposals document.
- 38.2. After the evaluation of the information and detailed price analyses presented by the Proposer, the Purchaser may:
  - (a) accept the Proposal; or

- (b) if appropriate, require that the total amount of the Performance Security be increased, at the expense of the Proposer, to a level not exceeding twenty percent (20%) of the Contract Price; or
- (c) reject the Proposal.

## **J. EVALUATION OF COMBINED TECHNICAL AND FINANCIAL PARTS, MOST ADVANTAGEOUS PROPOSAL AND NOTIFICATION OF INTENTION TO AWARD**

### **39. Evaluation of combined Technical and Financial Parts, Most Advantageous Proposal**

- 39.1. The Purchaser's evaluation of responsive Proposals will take into account technical factors, in addition to cost factors in accordance with Section III Evaluation and Qualification Criteria. The weight to be assigned for the Technical factors and cost is specified in the PDS. The Purchaser will rank the Proposals based on the evaluated Proposal score (B).
- 39.2. Best and Final Offer (BAFO): After completion of the combined technical and financial evaluation of proposals, If specified in the PDS, the Purchaser may invite those Proposers to submit their BAFOs. The procedure for submitting BAFOs will be specified in the PDS. BAFO is a final opportunity for Proposers to improve their Proposals without changing the specified business function and performance requirements in accordance with the invitation to Submit Second Stage Combined Technical and Financial Proposals, Proposers are not obliged to submit a BAFO. Where BAFO is used there will be no negotiation after BAFO.
- 39.3. BAFO will apply a two envelope procurement process. The submission of BAFOs, opening of the Technical Parts and Financial Parts and the evaluation of Proposals will follow the procedures described for the Technical, Financial and Combined evaluation above, as appropriate.
- 39.4. The Purchaser shall determine the Most Advantageous Proposal. The Most Advantageous Proposal is the Proposal of the Proposer that meets the Qualification Criteria and whose Proposal has been determined to be substantially responsive to the request for proposals document and is the Proposal with the highest combined technical and financial score.
- 39.5. If specified in the PDS, the Purchaser may conduct negotiations following the evaluation of the proposals and before the final

contract award. The procedure of the negotiations will be specified in the PDS.

- 39.6. Negotiations shall be held in the presence of probity auditor appointed by the Purchaser.
- 39.7. Negotiations may address any aspect of the contract so long as they do not materially change the specified business function and performance requirements.
- 39.8. The Purchaser may negotiate first with the Proposer that has the Most Advantageous Proposal. If the negotiations are unsuccessful the Purchaser may negotiate with the Proposer that has the next best Most Advantageous Proposal, and so on down the list until a successful negotiated outcome is achieved.
- 39.9. Unless otherwise specified in the PDS, the Purchaser will NOT carry out tests prior to Contract award, to determine that the performance or functionality of the Information System offered meets those stated in the Technical Requirements. However, if so specified in the PDS the Purchaser may carry out such tests as detailed in the PDS.
- 39.10. Proposer.
- 39.11. Prior to Contract award, the Purchaser may carry out visits or interviews with the Proposer's clients referenced in its Proposal and site inspections.
- 39.12. The capabilities of the manufacturers and subcontractors proposed by the Proposer that is determined to have offered the Most Advantageous Proposal for identified major items of supply or services will also be evaluated for acceptability in accordance with Section III, Evaluation and Qualification Criteria. Their participation should be confirmed with a letter of intent between the parties, as needed. Should a manufacturer or subcontractor be determined to be unacceptable, the Proposal will not be rejected, but the Proposer will be required to substitute an acceptable manufacturer or subcontractor without any change to the Proposal price. Prior to signing the Contract, the corresponding Appendix to the Contract Agreement shall be completed, listing the approved manufacturers or subcontractors for each item concerned.

**40. Purchaser's  
Right to Accept  
Any Proposal,  
and to Reject  
Any or All  
Proposals**

- 40.1. The Purchaser reserves the right to accept or reject any Proposal, and to annul the procurement process and reject all Proposals at any time prior to contract award, without thereby incurring any liability to Proposers. In case of annulment, all Proposals submitted and specifically, Proposal securities, shall be promptly returned to the Proposers.

- 41. Standstill Period**      41.1. The Contract shall not be awarded earlier than the expiry of the Standstill Period. The Standstill Period shall be ten (10) Business Days unless extended in accordance with ITP 46. The Standstill Period commences the day after the date the Purchaser has transmitted to each Proposer the Notification of Intention to Award the Contract. Where only one Proposal is submitted, or if this contract is in response to an emergency situation recognized by the Bank, the Standstill Period shall not apply.
- 42. Notification of Intention to Award**      42.1. The Purchaser shall send to each Proposer the Notification of Intention to Award the Contract to the successful Proposer. The Notification of Intention to Award shall contain, at a minimum, the following information:
- (a) the name and address of the Proposer submitting the successful Proposal;
  - (b) the Contract price of the successful Proposal;
  - (c) the total combined score of the successful Proposal;
  - (d) the names of all Proposers who submitted Proposals, and their Proposal prices as readout and as evaluated prices and technical scores;
  - (e) a statement of the reason(s) the Proposal (of the unsuccessful Proposer to whom the notification is addressed) was unsuccessful;
  - (f) the expiry date of the Standstill Period; and
  - (g) instructions on how to request a debriefing or submit a complaint during the standstill period;

## **K. AWARD OF CONTRACT**

- 43. Award Criteria**      43.1. Subject to ITP 40, the Purchaser shall award the Contract to the successful Proposer. This is the Proposer whose Proposal has been determined to be the Most Advantageous Proposal..  
Proposer.
- 44. Purchaser's Right to Vary Quantities at Time of Award**      44.1. The Purchaser reserves the right at the time of Contract award to increase or decrease, by the percentage(s) for items as indicated in the PDS.

**45. Notification of Award**

- 45.1. Prior to the date of expiry of the Proposal validity and upon expiry of the Standstill Period, specified in ITP 41.1 or any extension thereof, and, upon satisfactorily addressing any complaint that has been filed within the Standstill Period, the Purchaser shall notify the successful Proposer, in writing, that its Proposal has been accepted. The notification letter (hereinafter and in the Contract Forms called the “Letter of Acceptance”) shall specify the sum that the Purchaser will pay the Supplier in consideration of the execution of the Contract (hereinafter and in the Conditions of Contract and Contract Forms called “the Contract Price”).
- 45.2. Within ten (10) Business days after the date of transmission of the Letter of Acceptance, the Purchaser shall publish the Contract Award Notice which shall contain, at a minimum, the following information:
- (a) name and address of the Purchaser;
  - (b) name and reference number of the contract being awarded, and the selection method used;
  - (c) names of all Proposers that submitted Proposals, and their Proposal prices as read out at Proposal opening, and as evaluated;
  - (d) name of Proposers whose Proposals were rejected and the reasons for their rejection;
  - (e) the name of the successful Proposer, the final total contract price, the contract duration and a summary of its scope; and
  - (f) successful Proposer’s Beneficial Ownership Disclosure Form.
- 45.3. The Contract Award Notice shall be published on the Purchaser’s website with free access if available, or in at least one newspaper of national circulation in the Purchaser’s Country, or in the official gazette.
- 45.4. Until a formal contract is prepared and executed, the Notification of Award shall constitute a binding Contract.

**46. Debriefing by the Purchaser**

- 46.1. On receipt of the Purchaser’s Notification of Intention to Award referred to in ITP 42, an unsuccessful Proposer has three (3) Business Days to make a written request to the Purchaser for a debriefing. The Purchaser shall provide a debriefing to all unsuccessful Proposers whose request is received within this deadline.

- 46.2. Where a request for debriefing is received within the deadline, the Purchaser shall provide a debriefing within five (5) Business Days, unless the Purchaser decides, for justifiable reasons, to provide the debriefing outside this timeframe. In that case, the standstill period shall automatically be extended until five (5) Business Days after such debriefing is provided. If more than one debriefing is so delayed, the standstill period shall not end earlier than five (5) Business Days after the last debriefing takes place. The Purchaser shall promptly inform, by the quickest means available, all Proposers of the extended standstill period.
- 46.3. Where a request for debriefing is received by the Purchaser later than the three (3) Business Day deadline, the Purchaser should provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of Public Notice of Award of contract. Requests for debriefing received outside the three (3)-day deadline shall not lead to extension of the standstill period.
- 46.4. Debriefings of unsuccessful Proposers may be done in writing or verbally. The Proposer shall bear their own costs of attending such a debriefing meeting.

#### **47. Signing of Contract**

- 47.1. The Purchaser shall send to the successful Proposer the Letter of Acceptance including the Contract Agreement, and a request to submit the Beneficial Ownership Disclosure Form providing additional information on its beneficial ownership. The Beneficial Ownership Disclosure Form shall be submitted within eight (8) Business Days of receiving this request.
- 47.2. The successful Proposer shall sign, date and return to the Purchaser, the Contract Agreement within twenty-eight (28) days of its receipt.
- 47.3. Notwithstanding ITP 47.2 above, in case signing of the Contract Agreement is prevented by any export restrictions attributable to the Purchaser, to the country of the Purchaser, or to the use of the Information System to be supplied, where such export restrictions arise from trade regulations from a country supplying those Information System, the Proposer shall not be bound by its Proposal, always provided, however, that the Proposer can demonstrate to the satisfaction of the Purchaser and of the Bank that signing of the Contract Agreement has not been prevented by any lack of diligence on the part of the Proposer in completing any formalities, including applying for permits, authorizations and licenses

necessary for the export of the Information System under the terms of the Contract.

**48. Performance Security**

- 48.1. Within twenty-eight (28) days of the receipt of the Letter of Acceptance from the Purchaser, the successful Proposer shall furnish the performance security in accordance with the General Conditions, subject to ITP 38.2 (b), using for that purpose the Performance Security Form included in Section X, Contract Forms, or another form acceptable to the Purchaser. If the Performance Security furnished by the successful Proposer is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Proposer to be acceptable to the Purchaser. A foreign institution providing a Performance Security shall have a correspondent financial institution located in the Purchaser's Country.
- 48.2. Failure of the successful Proposer to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Proposal Security. In that event the Purchaser may award the Contract to the Proposer offering the next Most Advantageous Proposal.

**49. Adjudicator**

- 49.1. Unless the PDS states otherwise, the Purchaser proposes that the person named in the PDS be appointed as Adjudicator under the Contract to assume the role of informal Contract dispute mediator, as described in GCC Clause 43.1. In this case, a résumé of the named person is attached to the PDS. The proposed hourly fee for the Adjudicator is specified in the PDS. The expenses that would be considered reimbursable to the Adjudicator are also specified in the PDS. If a Proposer does not accept the Adjudicator proposed by the Purchaser, it should state its non-acceptance in its Proposal Form and make a counterproposal of an Adjudicator and an hourly fee, attaching a résumé of the alternative. If the successful Proposer and the Adjudicator nominated in the PDS happen to be from the same country, and this is not the country of the Purchaser too, the Purchaser reserves the right to cancel the Adjudicator nominated in the PDS and propose a new one. If by the day the Contract is signed, the Purchaser and the successful Proposer have not agreed on the appointment of the Adjudicator, the Adjudicator shall be appointed, at the request of either party, by the Appointing Authority specified in the SCC clause relating to GCC Clause 43.1.4, or if no Appointing

Authority is specified there, the Contract will be implemented without an Adjudicator.

**50. Procurement  
Related  
Complaint**

- 50.1. The procedures for making a Procurement-related Complaint are as specified in the PDS.

## SECTION II - PROPOSAL DATA SHEET (PDS)

The following specific data for the Information System to be procured shall complement, supplement, or amend the provisions in the Instructions to Proposers (ITP). Whenever there is a conflict, the provisions in the PDS shall prevail over those in ITP.

| ITP Reference                     | A. General                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ITP 1.1                           | <p>The reference number of the Request for Proposals is: <b><i>PK-MOITT-546238-GO-RFP</i></b></p> <p>The Purchaser is: <b><i>Ministry of Information Technology and Telecommunication</i></b></p> <p>The name of the RFP is: <b><i>Design, Development, Implementation and Support of National Open Data Ecosystem (NODE)</i></b></p> <p>The Purchaser <b><i>shall not</i></b> accept Proposal for multiple lots under this request for proposals document.</p> <p>The lots are: <b><i>“Not applicable”</i></b></p> |
| ITP 1.3 (a)                       | Electronic Procurement <b><i>shall not</i></b> be applicable to this procurement.                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| ITP 2.1                           | <p>The Borrower is: <b><i>Islamic Republic of Pakistan</i></b></p> <p>Loan or Financing Agreement amount: <b><i>US\$ 78 Million</i></b></p> <p>The name of the Project is: <b><i>Digital Economy Enhancement Project</i></b></p>                                                                                                                                                                                                                                                                                    |
| ITP 4.1                           | Maximum number of members in the JV shall be: <b><i>Three (03)</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| ITP 4.5                           | A list of debarred firms and individuals is available on the Bank’s external website: <a href="http://www.worldbank.org/debarr">http://www.worldbank.org/debarr</a> .                                                                                                                                                                                                                                                                                                                                               |
| B. Request for proposals Document |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| ITP 7.1                           | <p>For <u>Clarification of Proposal purposes</u> only, the Purchaser’s address is:</p> <p>Attention: <b><i>Senior Procurement Specialist</i></b></p> <p><b><i>Digital Economy Enhancement Project (DEEP)</i></b></p> <p><b><i>Ministry of Information Technology &amp; Telecommunication (MOITT)</i></b></p> <p>Address: <b><i>2<sup>nd</sup> Floor, TF Complex, G-9/4,</i></b></p> <p>Floor/ Room number: <b><i>DEEP (MOITT) PMU – Procurement Cell</i></b></p> <p>City: <b><i>Islamabad</i></b></p>               |

|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                    | <p>Country: <b>Pakistan</b></p> <p>Electronic mail address: <b><u><a href="mailto:procurement.specialist@deep.moitt.gov.pk">procurement.specialist@deep.moitt.gov.pk</a></u></b></p> <p>Requests for clarification should be received by the Purchaser no later than: <b><i>fifteen (15) days prior to the deadline for submission of Proposals in accordance with ITP 23.</i></b></p>                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>ITP 7.1</b>                     | <p>Web page: <b><u><a href="https://moitt.gov.pk/">https://moitt.gov.pk/</a></u></b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>ITP 7.4</b>                     | <p>A Pre-Proposal meeting “<b><i>shall</i></b>” take place at the following date, time and place:</p> <p>Date: <b><i>May 14, 2026</i></b></p> <p>Time: <b><i>1100 Hours Pakistan Standard Time</i></b></p> <p>Address: <b><i>2<sup>nd</sup> Floor, TF Complex, G-9/4,</i></b></p> <p>Floor/ Room number: <b><i>DEEP (MOITT) PMU – ONLINE/ VIRTUAL *</i></b></p> <p>City: <b><i>Islamabad</i></b></p> <p>Country: <b><i>Pakistan</i></b></p> <p>A site visit conducted by the Purchaser <b><i>shall not be</i></b> organized.</p> <p><i>The link for pre-proposal meeting and further updates shall be available on MOITT website <u><a href="https://moitt.gov.pk/">https://moitt.gov.pk/</a></u> under the tab “Latest News ” and/ or “Tenders” after May 07, 2026.</i></p> |
| <b>C. Preparation of Proposals</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ITP 10.1</b>                    | <p>The language of the Proposal is: <b><i>“English”</i></b>.</p> <p>All correspondence exchange shall be in <b><i>English</i></b> language.</p> <p>Language for translation of supporting documents and printed literature is <b><i>English.</i></b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>ITP 11.2 (j)</b>                | <p>The Proposer shall submit with its Proposal the following additional documents the Technical Part of its Proposal:</p> <p><b>Code of Conduct for Supplier’s Personnel (ES)</b></p> <p>The Proposer shall submit its Code of Conduct that will apply to the Supplier’s Personnel (as defined in GCC Clause 1.1) employed in the execution of the Contract at the Project Site/s to ensure compliance with the Supplier’s Environmental and/or social obligations under the Contract, as applicable. The Proposer shall use for this purpose the Code of Conduct form provided in Section IV. No substantial modifications shall be made to</p>                                                                                                                             |

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <p>this form, except that the Proposer may introduce additional requirements, including as necessary to take into account specific Contract issues/risks.</p> <p><b>Management Strategies and Implementation Plans (MSIP) to manage the (ES) risks</b></p> <p>The Proposer shall submit Management Strategies and Implementation Plans (MSIPs) to manage the standard Environmental and Social (ES) risks:</p> <p><b>Cybersecurity management strategies and implementation plans</b></p> <p>The Proposer shall submit method statement, management strategies and implementation plans and innovations to manage Cybersecurity risks consistent with Section VII – Purchaser’s Requirements – <b>1.12 Cybersecurity, 1.7.3 Information Security Standards, and 3.0.4 Security, Compliance &amp; Regulatory Alignment.</b></p>                                      |
| <b>ITP 11.3(d)</b>  | The Proposer shall submit the following additional documents in the Financial Part of its Proposal: <i><b>Not Applicable.</b></i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>ITP 13.1</b>     | <i><b>Alternative Proposals are not permitted</b></i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>ITP 13.2</b>     | <p>Alternatives to the Time Schedule <i><b>are not</b></i> permitted.</p> <p>If alternatives to the Time Schedule are permitted, the evaluation method will be as specified in Section III, Evaluation and Qualification Criteria.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ITP 13.4</b>     | Alternative technical solutions shall be permitted for the following parts of the Information System: <i><b>“none”</b></i> as further detailed in the Section VII – Purchaser’s Requirements <i><b>“not applicable”</b></i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>ITP 15.2</b>     | Prequalification <i><b>“has not”</b></i> been undertaken.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>ITP 16.2 (a)</b> | <p>In addition to the topics described in ITP Clause 16.2 (a), the Preliminary Project Plan must address the following topics:</p> <ul style="list-style-type: none"> <li>(i) <i><b>Project Organization and Management Sub-Plan, including management authorities, responsibilities, and contacts, as well as task, time and resource-bound schedules;</b></i></li> <li>(ii) <i><b>Implementation Sub-Plan;</b></i></li> <li>(iii) <i><b>Testing and Quality Assurance Sub-Plan;</b></i></li> <li>(iv) <i><b>Platform Operationalization Including Data Curation and Adoption Sub-Plan</b></i></li> <li>(v) <i><b>Capacity Building Plan;</b></i></li> <li>(vi) <i><b>Hosting, Infrastructure Sizing &amp; Deployment Plan;</b></i></li> <li>(vii) <i><b>Technical Support Service Sub-Plan;</b></i></li> <li>(viii) <i><b>Sustainability Plan.</b></i></li> </ul> |

|                     |                                                                                                                                                                                                                                                                                     |
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| <b>ITP 16.3</b>     | In the interest of effective integration, cost-effective technical support, and reduced re-training and staffing costs, Proposers shall offer the following items:<br><br><i>Not Applicable</i>                                                                                     |
| <b>ITP 17.2</b>     | The Proposer “ <b>must</b> ” propose Recurrent Cost Items                                                                                                                                                                                                                           |
| <b>ITP 17.2</b>     | The Proposer “ <b>must</b> ” propose for contracts for Recurrent Cost Items not included in the main Contract.                                                                                                                                                                      |
| <b>ITP 17.5</b>     | The Incoterms edition is: <b>2020</b> .                                                                                                                                                                                                                                             |
| <b>ITP 17.5 (a)</b> | Named place of destination is: <b>DDP Islamabad</b>                                                                                                                                                                                                                                 |
| <b>ITP 17.6</b>     | Named place of final destination (or Project site) is: Digital Economy Enhancement Project, 2 <sup>nd</sup> Floor Telecom Foundation Building, Mauve Area, Sector G-9, <b>Islamabad</b> .                                                                                           |
| <b>ITP 17.8</b>     | ITP 17.8 is modified as follows:<br><br><b>“There are no modifications to ITP 17.8”</b>                                                                                                                                                                                             |
| <b>ITP 17.9</b>     | The prices quoted by the Proposer <b>shall not</b> be subject to adjustment during the performance of the Contract.                                                                                                                                                                 |
| <b>ITP 18.1</b>     | The Proposer <b>is</b> required to quote in the currency of the Purchaser’s Country the portion of the Proposal price that corresponds to expenditures incurred in that currency.                                                                                                   |
| <b>ITP 19.1</b>     | The Proposal shall be valid until: <b>31 December 2026</b> .                                                                                                                                                                                                                        |
| <b>ITP 19.3 (a)</b> | The Proposal price shall be adjusted by the following factor(s):<br><br><i>Not Applicable</i>                                                                                                                                                                                       |
| <b>ITP 20.1</b>     | A Proposal-Securing Declaration “ <b>shall be</b> ” required.<br>A Proposal Security <b>shall not be</b> required.                                                                                                                                                                  |
| <b>ITP 20.3 (d)</b> | Other types of acceptable securities:<br><br><b>“None”</b>                                                                                                                                                                                                                          |
| <b>ITP 20.9</b>     | If the Proposer performs any of the actions prescribed in ITP 20.9 (a) or (b), the Purchaser will declare the Proposer ineligible to be awarded contracts by the Purchaser for a period of <b>Three (03) Years</b> starting from the date the Proposer performs any of the actions. |

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| <b>ITP 21.3</b>                                          | <p>The written confirmation of authorization to sign on behalf of the Proposer shall consist of:</p> <p>A board resolution or its equivalent, or notarized Power of Attorney specifying the representative's authority to sign the proposal(s) on behalf of, and to legally bind, the proposal(s) shall be provided. If the proposer is an intended or an existing Joint Venture, the power of attorney should be signed by all partners and specify the authority of the named representative of the Joint Venture to sign on behalf of and legally bind the intended or existing Joint Venture partners. If the Joint Venture has not been formed, also include evidence from all proposed Joint Venture partners of their intent to enter into a JV in the event of a contract award following ITP 11.</p> |
| <b>D. Submission and Opening of Proposals</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>ITP 22.1</b>                                          | <p>In addition to the original of the Proposal, the number of copies is: <b><i>Two (2) hard copies and one (1) soft copy (Technical Part only on USB).</i></b></p> <p><b><i>In case of any discrepancy between the soft and hard copies, the hard copy shall prevail.</i></b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>ITP 23.1</b>                                          | <p>For Proposal submission purposes only, the Purchaser's address is:</p> <p>Attention: <b><i>Senior Procurement Specialist DEEP</i></b></p> <p><b><i>Digital Economy Enhancement Project</i></b></p> <p><b><i>Ministry of Information Technology &amp; Telecommunication</i></b></p> <p>Address: <b><i>2<sup>nd</sup> Floor, TF Complex, G-9/4,</i></b></p> <p>Floor/ Room number: <b><i>DEEP (MOITT) PMU – Procurement Cell</i></b></p> <p>City and Country: <b><i>Islamabad, Pakistan</i></b></p> <p>The deadline for Proposal submission is:</p> <p>Date: <b><i>June 17, 2026</i></b></p> <p>Time: <b><i>1100 Hours Pakistan Standard Time</i></b></p>                                                                                                                                                    |
| <b>ITP 23.1</b>                                          | <p>Proposers <b><i>“shall not”</i></b> have the option of submitting their Proposals electronically.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>E. Public Opening of Technical Parts of Proposals</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>ITP 26.1</b>                                          | <p>The Proposal opening shall take place at:</p> <p>Address: <b><i>2<sup>nd</sup> Floor, TF Complex, G-9/4,</i></b></p> <p>Floor/ Room number: <b><i>DEEP (MOITT) PMU – Procurement Cell</i></b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>City and Country: <b>Islamabad, Pakistan</b></p> <p>Date: <b>June 17, 2026</b></p> <p>Time: <b>1130 Hours Pakistan Standard Time</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                  |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |
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| <b>ITP 26.1</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | The electronic Proposal opening procedures shall be: <b>“not applicable”</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                  |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |
| <b>G. Evaluation of Technical Part of Proposals</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                  |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |
| <b>ITP 32.2</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>The weighting to be given for Rated Criteria (including technical and non-price factors) is: <b>60 %</b></p> <p>The technical factors (including sub-factors if any), which for purposes of this document carry the same meaning as Rated Criteria, and the corresponding weight out of 100% are:</p> <table border="1"> <thead> <tr> <th>Technical Factor</th><th>Technical Sub-Factor</th><th>Weight</th></tr> </thead> <tbody> <tr> <td rowspan="5"> <p><b>A. Proposed Solution Exceeding the Minimum Requirements Scoring Basis:</b> Score from 0 to 4 will be calculated and assigned based upon the vendor’s input against the five scoring levels (<b>Out of the box (4), Customisation (3), 3rd Party (2), To be Developed (1), Not Available (0)</b>) for each feature listed in the Annex A, Annex B, Annex C, Annex D, and Annex E against each and every components as listed.</p> <p><b>Documents Required:</b><br/>Duly completed Annex A, Annex B, Annex C, Annex D, and Annex E, ensuring that only one scoring level is selected for each feature listed under all components within the respective annexes (A–E).</p> <p>Each selected scoring level must be supported by <b>valid documentary evidence</b>, with clear references provided within the Bid document in accordance with <b>Annex – H</b>.</p> </td><td>National Open Data Portal (<b>Annex-A</b>)</td><td><b>20%</b></td></tr> <tr> <td>Api Gateway (<b>Annex-B</b>)</td><td><b>12%</b></td></tr> <tr> <td>Sandbox Environment &amp; Developer Workspace (<b>Annex-C</b>)</td><td><b>05%</b></td></tr> <tr> <td>Ai/Ml Repository &amp; Model Lifecycle Management (<b>Annex-D</b>)</td><td><b>08%</b></td></tr> <tr> <td>Etl Data Ingestion Transformation and Loading (<b>Annex-E</b>)</td><td><b>10%</b></td></tr> </tbody> </table> | Technical Factor | Technical Sub-Factor | Weight | <p><b>A. Proposed Solution Exceeding the Minimum Requirements Scoring Basis:</b> Score from 0 to 4 will be calculated and assigned based upon the vendor’s input against the five scoring levels (<b>Out of the box (4), Customisation (3), 3rd Party (2), To be Developed (1), Not Available (0)</b>) for each feature listed in the Annex A, Annex B, Annex C, Annex D, and Annex E against each and every components as listed.</p> <p><b>Documents Required:</b><br/>Duly completed Annex A, Annex B, Annex C, Annex D, and Annex E, ensuring that only one scoring level is selected for each feature listed under all components within the respective annexes (A–E).</p> <p>Each selected scoring level must be supported by <b>valid documentary evidence</b>, with clear references provided within the Bid document in accordance with <b>Annex – H</b>.</p> | National Open Data Portal ( <b>Annex-A</b> ) | <b>20%</b> | Api Gateway ( <b>Annex-B</b> ) | <b>12%</b> | Sandbox Environment & Developer Workspace ( <b>Annex-C</b> ) | <b>05%</b> | Ai/Ml Repository & Model Lifecycle Management ( <b>Annex-D</b> ) | <b>08%</b> | Etl Data Ingestion Transformation and Loading ( <b>Annex-E</b> ) | <b>10%</b> |
| Technical Factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Technical Sub-Factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Weight           |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |
| <p><b>A. Proposed Solution Exceeding the Minimum Requirements Scoring Basis:</b> Score from 0 to 4 will be calculated and assigned based upon the vendor’s input against the five scoring levels (<b>Out of the box (4), Customisation (3), 3rd Party (2), To be Developed (1), Not Available (0)</b>) for each feature listed in the Annex A, Annex B, Annex C, Annex D, and Annex E against each and every components as listed.</p> <p><b>Documents Required:</b><br/>Duly completed Annex A, Annex B, Annex C, Annex D, and Annex E, ensuring that only one scoring level is selected for each feature listed under all components within the respective annexes (A–E).</p> <p>Each selected scoring level must be supported by <b>valid documentary evidence</b>, with clear references provided within the Bid document in accordance with <b>Annex – H</b>.</p> | National Open Data Portal ( <b>Annex-A</b> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>20%</b>       |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Api Gateway ( <b>Annex-B</b> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>12%</b>       |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Sandbox Environment & Developer Workspace ( <b>Annex-C</b> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>05%</b>       |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Ai/Ml Repository & Model Lifecycle Management ( <b>Annex-D</b> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>08%</b>       |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Etl Data Ingestion Transformation and Loading ( <b>Annex-E</b> )                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>10%</b>       |                      |        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                              |            |                                |            |                                                              |            |                                                                  |            |                                                                  |            |

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|  | <b>B. National Open Data Ecosystem Architecture</b><br><b>Scoring Basis:</b><br>Score will be calculated based upon the vendor's provided Evidence listed along with all other requirements inside <b>Annex – F</b> .<br><b>Documents Required:</b><br>All required Evidence listed inside <b>Annex – F</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | National Open Data Ecosystem Architecture ( <b>Annex – F</b> ) | <b>20%</b>  |
|  | <b>C. Infrastructure Sizing</b><br><b>Scoring Basis:</b><br>Score will be calculated based upon the vendor's provided infrastructure sizing inside <b>Resource Parameters to be Declared table</b> in line with all requirements / evidence and other details inside <b>Annex – G</b> .<br><b>Documents Required:</b><br>Duly filled Resource Parameters to be Declared table (Check Annex – G)<br>Supporting documents if any.                                                                                                                                                                                                                                                                                                                                                                               | Infrastructure Sizing <b>Annex – G</b> .                       | <b>10%</b>  |
|  | <b>D. Key Personnel — Evaluation Criteria</b><br><b>Scoring Basis:</b><br>Evaluation criteria and scoring methodology for assessing Key Personnel proposed by the Vendor for each role is scored across up to three criteria: Educational Qualification, Relevant Experience, and — where well-known professional certifications exist for that discipline — Professional Certifications. For roles where no widely recognised professional certification exists, the certification criterion is marked N/A and carries no score; the weighting is redistributed to Experience. Pls check Annex I for further details.<br><b>Documents Required:</b><br>CVs, academic certificates, and project references are mandatory supporting documents used to verify and substantiate scoring as per <b>Annex I</b> . | Key Personnel — Evaluation Criteria <b>Annex – I</b>           | <b>15%</b>  |
|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>GRAND TOTAL</b>                                             | <b>100%</b> |

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|                                                                                               | <p><i>Passing marks are at least 50% in technical evaluation. Only those proposer(s) who score(s) at least 50% in technical evaluation would be considered for further processing – financial part opening/ evaluation.</i></p> <p>The technical proposal scoring methodology is specified in Annex Tech-I appended at the end of this document.</p>                                                                                                                                       |
| <b>H. Notification of Evaluation of Technical Parts and Public Opening of Financial Parts</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>ITP 33.8</b>                                                                               | <p>The Letter of Proposal – Financial Part and the Price Schedules shall be initialed by <i>at least 02 authorized</i> representatives of the Purchaser conducting Proposal opening.</p> <p><i>Each proposal(s) (the aforesaid pages) shall be initialed by the 2 authorized representatives of Purchaser and shall be numbered, as applicable.</i></p> <p><i>Any modification to the unit or total price shall be initialed by the respective Representative(s) of the Purchaser.</i></p> |
| <b>I. Evaluation of Financial Part of Proposals</b>                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>36.1(f)</b>                                                                                | <p>The adjustments shall be determined using the following criteria, from amongst those set out in Section III, Evaluation and Qualification Criteria:</p> <p>(a) Deviation in Time for Completion: <i>No</i></p> <p>(b) Present value of Recurrent Costs <i>No</i></p> <p>(c) Functional Guarantees of the Facilities <i>No</i></p> <p>(d) Work, services, facilities, etc., to be provided by the Purchaser: <i>No</i></p>                                                               |
| <b>ITP 36.2</b>                                                                               | <p>The currency(ies) of the Proposal shall be converted into a single currency as follows: <i>Pak Rupees</i></p> <p>The currency that shall be used for Proposal evaluation and comparison purposes to convert all Proposal prices expressed in various currencies into a single currency is: <i>Pak Rupees</i></p> <p>The source of exchange rate shall be: <i>State Bank of Pakistan</i></p> <p>The date for the exchange rate shall be: <i>Selling Rate on June 01, 2026.</i></p>       |
| <b>J. Evaluation of Combined Technical and Financial Parts and Most Advantageous Proposal</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>ITP 39.1</b>                                                                               | The weight to be given for cost is: <i>0.4 X of 1.0 (40%)</i>                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>ITP 39.2</b>                                                                               | <i>BAFO does not apply.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>ITP 39.5</b>             | Negotiation <i>does not apply</i> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>ITP 39.9</b>             | Not Applicable.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>K. AWARD OF CONTRACT</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>ITP 44</b>               | <p>The maximum percentage by which Deliverables 1 – 6 may be increased is: <b>15%</b></p> <p>The maximum percentage by which Deliverables 1 – 6 may be decreased is: <b>15%</b></p> <p><i>Variation applies only to quantities of deliverables (e.g., number of datasets, number of organizations onboarded), not to input quantities.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>ITP 49</b>               | The proposed Adjudicator is: <b><i>Not Applicable.</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>ITP 50.1</b>             | <p>The procedures for making a Procurement-related Complaint are detailed in the “<u>Procurement Regulations for IPF Borrowers</u> (Annex III).” A Procurement-related Complaint may challenge any of the following:</p> <ol style="list-style-type: none"> <li>1. The terms of the request for proposals document;</li> <li>2. the Purchaser’s decision to exclude a Proposer from the procurement process prior to the award of contract; and</li> <li>3. The Purchaser’s decision to award the contract.</li> </ol> <p>If a Proposer wishes to make a Procurement-related Complaint, the Proposer should submit its complaint following these procedures, in writing (by the quickest means available, that is either by email or fax), to:</p> <p>For the attention: <b><i>Mr. Asfand Yar Khan</i></b></p> <p>Title/position: <b><i>Member (Digital &amp; Emerging Technology)</i></b></p> <p>Purchaser: <b><i>Ministry of Information Technology and Telecom</i></b></p> <p>Email address: <b><u><i>member.det@moitt.gov.pk</i></u></b></p> <p>A copy of the complaint can be sent for the Bank’s information and monitoring to: <b><u><i>pprocurementcomplaints@worldbank.org</i></u></b></p> |

**Résumé of the proposed Adjudicator.**

*Not Applicable*

## **SECTION III - EVALUATION AND QUALIFICATION CRITERIA**

This Section contains all the criteria that the Purchaser shall use to evaluate Proposals and qualify Proposers. No other factors, methods or criteria shall be used. The Proposer shall provide all the information requested in the forms included in Section IV, Proposal Forms.

### **1. Qualification**

#### **1.1 Qualification Requirements**

The Proposer's qualification shall be assessed in accordance with the Qualification table included in this section. Failure to meet and/ or substantiate any of the qualification criteria include in 1. Qualification in this section may result in the Proposal being declared non-responsive.

#### **1.2 Financial Resources**

Using the relevant Form, FIN 1.3.3 in Section IV, Proposal Forms, the Proposer must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet:

(i) the following cash-flow requirement:

and

(ii) the overall cash flow requirements for this contract and its current supply and services' commitment.

#### **1.3 Key Personnel**

The Proposer must demonstrate that it will have suitably qualified key personnel. The Proposer shall complete the relevant Forms in Section IV, Proposal Forms.

### **1. Project Manager**

- Key Responsibilities: Leadership, stakeholder management, project delivery (SOW 4.1–4.8).
- Basic Qualification: Bachelor's in Business Administration, Computer Science, IT, or related.
- Relevant Experience: 10+ years in IT project management, including  $\geq 2$  large-scale data platforms/digital government projects. IFI/public sector experience preferred.
- Professional Certifications (Valid, Preferred): PMP, PRINCE2, or equivalent.

- Evidence Required: CV, academic & professional certificates,  $\geq 2$  project references.

## 2. Solution Architect

- **Key Responsibilities:** Design of end-to-end architecture; API-first, secure, cloud-native (SOW 4.3).
- **Basic Qualification:** Bachelor's in Computer Science/Software Engineering.
- **Relevant Experience:** 8+ years in system architecture;  $\geq 2$  projects as lead architect for integrated systems (portal, API gateway, ETL pipelines).
- **Professional Certifications (Valid, Preferred):** TOGAF
- Evidence Required: CV, academic & professional certificates, architecture diagrams, project references.

## 3. Lead Software Engineer (Frontend)

- **Key Responsibilities:** Lead the design, development, and optimization of the user-facing components of the platform, including the Open Data Portal and Developer interfaces. Ensure responsive design, usability, accessibility compliance, and performance optimization of web applications. Coordinate with backend, API, and UX teams to ensure seamless integration and consistent user experience across all modules (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor's in Computer Science, Software Engineering, Information Technology, or related discipline.
- **Relevant Experience:** 8+ years in frontend development including  $\geq 2$  large-scale web platforms, open data portals, or digital government platforms. Experience with modern web architectures, frontend frameworks, and API-driven interfaces is required.
- **Professional Certifications (Valid, Preferred):** Relevant frontend development certifications or professional training in modern web technologies.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

## 4. Lead Software Engineer (Backend)

- **Key Responsibilities:** Lead the architecture and development of backend services, application logic, and system integration components supporting the Open Data Portal, API services, and platform modules. Ensure scalability, performance optimization, secure coding practices, and robust service orchestration across system components (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor's in Computer Science, Software Engineering, Information Technology, or related discipline.
- **Relevant Experience:** 8+ years in backend system development including  $\geq 2$  large-scale distributed systems, data platforms, or digital government solutions. Experience with microservices architecture, APIs, and database systems required.
- **Professional Certifications (Valid, Preferred):** Relevant backend development or cloud platform certifications.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

### 5. Integration & Implementation Specialist

- **Key Responsibilities:** Design and implement system integrations between the ETL layer, Open Data Portal, API Gateway, AI/ML repository, and external data providers. Ensure reliable data exchange, API interoperability, and integration with government systems and data sources (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor's in Computer Science, Information Systems, Software Engineering, or related discipline.
- **Relevant Experience:** 7+ years in enterprise system integration including  $\geq 2$  large-scale system integration or government digital platform projects involving APIs, data exchange frameworks, or middleware platforms.
- **Professional Certifications (Valid, Preferred):** Integration architecture or enterprise system certifications.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

### 6. AI/ML Expert

- **Key Responsibilities:** Design and implement the AI/ML repository architecture and support the lifecycle management of analytical models. Provide guidance on model storage, metadata management, version control, and integration of analytical outputs with APIs and developer environments (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor's or Master's in Data Science, Artificial Intelligence, Computer Science, or related discipline.
- **Relevant Experience:** 7+ years in data science, AI/ML systems, or analytical platforms including  $\geq 2$  projects involving machine learning model lifecycle management, data analytics platforms, or AI-driven government solutions.
- **Professional Certifications (Valid, Preferred):** Recognized certifications in AI, machine learning, or data science platforms.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

### 7. IT Infrastructure Specialist

- **Key Responsibilities:** Design and implement the infrastructure architecture supporting the platform including compute, storage, networking, container orchestration, and cloud services. Ensure high availability, disaster recovery, system monitoring, and secure infrastructure deployment across production, staging, and DR environments (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor's in Computer Science, Information Technology, Network Engineering, or related discipline.
- **Relevant Experience:** 8+ years in IT infrastructure design and operations including  $\geq 2$  projects involving large-scale digital platforms, cloud infrastructure, or government IT systems.
- **Professional Certifications (Valid, Preferred):** Recognized cloud platform certifications or infrastructure management certifications.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

## 8. Business Analyst / Service Process Expert

- **Key Responsibilities:** Conduct requirements analysis, stakeholder consultations, and process mapping to support the development of the Business Requirements Document (BRD) and system design artifacts. Identify process improvements and define workflows for data publishing, metadata management, and platform operations (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor's in Business Administration, Information Systems, Computer Science, or related discipline.
- **Relevant Experience:** 7+ years in business analysis or service process design including  $\geq 2$  projects involving digital government services, data platforms, or enterprise information systems.
- **Professional Certifications (Valid, Preferred):** Business analysis certifications such as CBAP, PMI-PBA, or equivalent.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

## 9. Product Owner

- **Key Responsibilities:** Define and manage product requirements, prioritize feature development, and ensure alignment between stakeholder needs and system functionality. Coordinate with development teams to manage product backlogs and ensure timely delivery of platform components (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor's in Computer Science, Business Administration, Information Systems, or related discipline.
- **Relevant Experience:** 7+ years in product management or digital product development including  $\geq 2$  projects involving large-scale digital platforms or public sector technology solutions.
- **Professional Certifications (Valid, Preferred):** Agile product management or product ownership certifications.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

## 10. CX Expert (Customer Experience Expert)

- **Key Responsibilities:** Design and evaluate the user experience of the Open Data Portal, developer interfaces, and related services. Ensure usability, accessibility, and user-centric design principles are applied across all system components to enhance adoption and engagement (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor's in Human-Computer Interaction, Design, Computer Science, Information Systems, or related discipline.
- **Relevant Experience:** 7+ years in user experience design or digital service design including  $\geq 2$  projects involving web platforms, digital government services, or data portals.
- **Professional Certifications (Valid, Preferred):** Recognized UX/UI design or human-centered design certifications.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

**11. Scrum Master**

- Key Responsibilities: Facilitate Agile development processes, coordinate sprint planning, backlog grooming, and team collaboration activities. Ensure Agile methodology is applied effectively across development teams and remove impediments to maintain project momentum (SOW 4.1–4.8).
- Basic Qualification: Bachelor's in Computer Science, Information Technology, Business Administration, or related discipline.
- Relevant Experience: 7+ years in software development project environments including  $\geq 2$  projects using Agile methodologies for digital platforms or enterprise systems.
- Professional Certifications (Valid, Preferred): Certified Scrum Master (CSM), Professional Scrum Master (PSM), or equivalent.
- Evidence Required: CV, academic & professional certificates,  $\geq 2$  project references.

**12. Training and Knowledge Transfer Lead**

- Key Responsibilities: Design and implement training programs and knowledge transfer activities for government staff and data providers. Develop training materials, operational manuals, and capacity-building programs to ensure long-term platform sustainability and effective system adoption (SOW 4.1–4.8).
- Basic Qualification: Bachelor's in Education, Information Systems, Computer Science, Business Administration, or related discipline.
- Relevant Experience: 7+ years in training delivery, knowledge transfer programs, or technology capacity building including  $\geq 2$  projects involving digital platforms or government IT systems.
- Professional Certifications (Valid, Preferred): Professional training or instructional design certifications.
- Evidence Required: CV, academic & professional certificates,  $\geq 2$  project references.

**13. Information Security Specialist**

- Key Responsibilities: Security posture, compliance, and audit management (SOW 4.6).
- Basic Qualification: Bachelor's in Computer Science, Cybersecurity, or related.
- Relevant Experience: 7+ years in information security, including audits of platforms, API/IAM, data governance.
- Professional Certifications (Valid, Preferred): CISSP, CISM, CEH, or equivalent.
- Evidence Required: CV, academic & professional certificates, project references, description of frameworks applied.

**14. Data Engineer (ETL & Integration Specialist)**

- Key Responsibilities: Build and manage ETL/ELT pipelines; integrate multi-source datasets (SOW 4.3.3).
- Basic Qualification: Bachelor's in Computer Science/Data Science.

- Relevant Experience: 5+ years in data engineering;  $\geq 2$  projects involving complex pipelines across multiple sources with diverse datasets using modern ETL tools.
- Professional Certifications (Valid, Preferred): Certificaitons related to any Modern ETL Tools.
- Evidence Required: CV, academic & professional certificates, pipeline descriptions, project references.

#### **15. Database Designer & Administrator**

- Key Responsibilities: Logical/physical database design; optimization; globally recognised standards alignment.
- Basic Qualification: Bachelor's in Computer Science or related.
- Relevant Experience: 7+ years in DB design/administration; large dataset management; SQL tuning; ETL/ELT support.
- Professional Certifications (Valid, Preferred): Oracle, PostgreSQL, MySQL, or equivalent DB certifications.
- Evidence Required: CV, academic & professional certificates, project references.

#### **16. UI/UX Designer**

- Key Responsibilities: User-centric, WCAG 2.1 AA–compliant designs for portals.
- Basic Qualification: Bachelor's in Design, HCI, or equivalent with portfolio.
- Relevant Experience: 5+ years in UI/UX design; experience with data-rich platforms and accessibility standards.
- Professional Certifications (Valid, Preferred): UX/UI design or accessibility certifications.
- Evidence Required: CV, academic & professional certificates, portfolio link.

#### **17. Cloud/DevOps Engineer**

- Key Responsibilities: Cloud infra setup, CI/CD, automation, IaC (SOW 5.2).
- Basic Qualification: Bachelor's in Computer Science/related.
- Relevant Experience: 5+ years in IT, including  $\geq 3$  years in Private or Public Cloud/DevOps deployments.
- Professional Certifications (Valid, Preferred): Any Modern Cloud Associate/Professional level certifications.
- Evidence Required: CV, academic & professional certificates, project references, CI/CD diagrams.

#### **18. Developer Sandbox Specialist / Platform Engineer**

- Key Responsibilities: Build/manage sandbox environment, IDE integration, container orchestration (SOW 4.3.2).
- Basic Qualification: Bachelor's in Computer Science/related.
- Relevant Experience: 5+ years in software/platform engineering;  $\geq 1$  projects involving browser-based IDEs or Kubernetes-based developer environments.

- Professional Certifications (Valid, Preferred): Industry-recognized container orchestration certifications.
- Evidence Required: CV, academic & professional certificates, project references.

### **Data Curation Team**

The Vendor shall propose a clearly defined Data Curation Team structure with minimum required roles as specified below.

The proposal shall include:

- Role definitions;
- Reporting hierarchy;
- Allocation model (full-time / part-time);
- Scalability plan aligned with dataset onboarding growth;
- Replacement and continuity plan.

#### **a. Mandatory Roles**

The Vendor shall provide, at minimum, the following roles:

### **19. Data Curation Lead**

#### **Minimum Requirements:**

- Bachelor's or higher degree in Information Management, Data Science, Computer Science, Statistics, or related discipline;
- Minimum 7+ years of experience in data governance, metadata management, or information systems;
- Demonstrated experience with open data or digital platforms;
- Experience in metadata standards implementation.

#### **Responsibilities:**

- Lead metadata governance framework;
- Approve dataset publication;
- Oversee metadata compliance;
- Coordinate with Vendor technical team;
- Act as primary point of contact for metadata governance.

### **20. Metadata Specialist**

#### **Minimum Requirements:**

- Bachelor's degree in Information Science, Library Science, Data Management, or related discipline;
- Minimum 5+ years of experience in metadata management or catalog systems;
- Familiarity with internationally recognized metadata standards.

#### **Responsibilities:**

- Validate metadata entries;
- Maintain controlled vocabularies;
- Perform mapping and verification;
- Conduct metadata quality audits.

**21. Data Quality Analyst****Minimum Requirements:**

- Bachelor's degree in Data Science, Statistics, Computer Science, or related field;
- Minimum 5+ years of experience in data validation, data profiling, or quality assurance.

**Responsibilities:**

- Review dataset structural integrity;
- Identify anomalies and inconsistencies;
- Validate transformation outputs;
- Monitor ingestion quality metrics.

**22. Data Steward / Agency Liaison (Minimum One)****Minimum Requirements:**

- Minimum 5+ years of experience working with government or institutional data;
- Strong coordination and documentation skills.

**Responsibilities:**

- Coordinate with participating agencies;
- Provide guidance on metadata completion;
- Follow up on corrections;
- Support dataset updates.

**23. Data Scientist****Minimum Requirements:**

- Bachelor's or Master's degree in Data Science, Computer Science, Statistics, or related discipline
- Minimum 5+ years of experience in data science, statistical analysis, or analytical modeling

**Responsibilities:**

- Support data curation and ingestion activities for participating agencies
- Perform statistical analysis and data profiling to inform metadata enrichment and quality assurance
- Develop analytical models and data science solutions to support platform use cases
- Collaborate with the AI/ML Expert on model lifecycle management, ensuring clear separation of concerns between model repository governance (AI/ML Expert) and data preparation, analysis, and model development (Data Scientist)
- Provide technical guidance to data providers on data structuring and preparation
- Contribute to the continuous improvement of data ingestion pipelines and curation workflows

#### 1.4 Subcontractors/vendors/manufacturers

Subcontractors/vendors/manufacturers for major items of supply or services identified in the bidding document (RFP) must meet the minimum criteria specified therein for each item.

Subcontractors for the following additional major items of supply or services must meet the following minimum criteria, herein listed for that item:

| Item No. | Description of Item | Minimum Criteria to be met |
|----------|---------------------|----------------------------|
| 1        | Not Applicable.     |                            |
| 2        |                     |                            |
| 3        |                     |                            |
| ...      |                     |                            |

Failure to comply with this requirement will result in the rejection of the subcontractor.

#### 1.5 Manufacturer's authorization

For all powered (active) hardware and/or software components of the Information System which the Proposer does not itself produce, by submission of documentary evidence in its Proposal, the Proposer must establish to the Purchaser's satisfaction that it is not prohibited to supply those components in the Purchaser's country under the Contract(s) that may result from this procurement.

- (i) In the case of powered (active) hardware and other powered equipment, this must be documented by including Manufacturer's Authorizations in the Proposal (based on the sample found in the Sample Proposal Forms in Section IV.);
- (ii) In the case of proprietary commercial software (i.e., excluding open source or "freeware" software) that the Proposer does not manufacture itself and for which the Proposer has or will establish an Original Equipment Manufacturer (OEM) relationship with the manufacture, the Proposer must provide Manufacturer's Authorizations;
- (iii) In the case of proprietary commercial software (i.e., excluding open source or "freeware" software) that the Proposer does not manufacture itself and for which the Proposer does not or will not

establish an OEM relationship with the manufacturer, the Proposer must document to the Purchaser's satisfaction that the Proposer is not excluded from sourcing these items from the manufacturer's distribution channels and proposing offering these items for supply in the Borrower's Country.

- (iv) In the case of open source software, the Proposer must identify the software item as open source and provide copies of the relevant open source license(s).

The Proposer is responsible for ensuring that the manufacturer or producer complies with the requirements of ITP 4 and ITP 5 and meets the minimum criteria listed above for that item.

### **1.6 Local Representative**

In the case of a Proposer not doing business within the Purchaser's country, the Proposer shall submit documentary evidence in its Proposal to establish to the Purchaser's satisfaction that it is or will be (if awarded the Contract) represented by an agent or any other established third party in that country who is equipped and able to carry out / manage the Proposer's maintenance, technical support, training, and warranty repair obligations specified in the Purchaser's Requirements (including any response time, problem-resolution norms or other aspects that may be specified in the Contract).

## **2. Technical Evaluation**

### **2.1 Assessment of adequacy of Technical Proposal with Requirements**

Proposers must meet the minimum/ mandatory technical proposals requirements provided in the bidding documents (RFP) on a pass/fail criterion prior to being considered for detailed technical evaluation by applying the scored technical factors/sub factors in accordance with PDS ITP 32.2. This will include an assessment of the Proposer's responsiveness to the technical requirements stipulated in "Section VII (Schedule of Requirements)" in addition to meeting the Eligibility and Qualification Requirements.

### **2.2 Technical Evaluation (ITP 32.2)**

The Rated Criteria (including technical and non-price factors, and sub factors if any), shall be evaluated, and the scores shall be given to each factor and sub factor are specified in the PDS ITP 32.2.

## **3. Technical alternatives**

If invited in accordance with ITP 13.4, will be evaluated as follows: *"none"*.

## 4. Financial Evaluation

The Purchaser will evaluate the Financial Part of Proposals that have successfully passed the Technical Evaluation stage. The Evaluated Proposal Price (C) shall be determined in accordance with ITP 36 including all the (relevant) (sub)sections.

The following factors and methods will apply:

### (a) Time Schedule:

The number of weeks, from the effective date specified in Article 3 of the Contract Agreement, to achieve Operational Acceptance must be no more than: **100 weeks**, *consistent with the Implementation Schedule*.

Adjustment of the prices for Time is Not Applicable.

### (b) Recurrent Costs

Conversion of Recurrent Costs to Present value is “Not Applicable” (c) **Specific additional criteria**

*“Not Applicable”*

### (d) Total Project Cost Coverage

The Financial Proposal shall include, and will be evaluated based on, the total proposed cost for the complete scope of the project, covering all Deliverables from Deliverable 1 through Deliverable 6.

**The proposal must clearly itemize the cost of each major Module/Component as separate line items, including but not limited to:**

- Open Data Portal
- ETL (Data Extraction, Transformation & Standardisation Layer)
- Sandbox Environment
- API Gateway
- AI/ML Repository and Model Lifecycle Management
- Hosting & Infrastructure Costs – Pakistan Cloud First Policy Compliant
- Any additional components proposed as part of the solution
- Data Curation Team (including roles specified in Section VII, 2.1.8.6.2)

**Each component cost shall explicitly include:**

- One (01) year of SLA services shall be quoted separately, with an option for the Purchaser to extend the same for an additional two (02) years on same terms, conditions and prices. The cost of the first year shall be taken into account for the purpose of overall proposal pricing and financial evaluation only to compare proposals on a like-for-like basis but may or may not be part of the resulting Contract depending upon the project life/ completion and available budget(s). The cost of the second and third years shall not be taken

into account for the purpose of overall proposal pricing but binding upon the (successful) Proposer/ Supplier

- The Year 1 SLA cost shall not be added to the Contract Price unless and until MoITT issues a separate contract or variation order activating the SLA. MoITT's discretion to activate the SLA is absolute and no compensation shall be due for non-activation.
- Depending upon requirements, MOITT may award separate Contract for SLA on annual basis from its own regular/ recurring annual budget and it is agreed by the (successful) Proposer/ Supplier that they will abide by the prices, terms and conditions and other modalities of the SLA if awarded by MOITT after successful completion of all the deliverables and performance obligations under the Contract.
- All applicable software licenses initiated after Acceptance of Deliverable 05 until the contract completion and final sign-off
- Any configuration, integration, deployment, testing, training, documentation, transition, or ancillary costs necessary for full implementation

No cost elements required to deliver the complete scope of all six (06)

Deliverables within the prescribed timelines shall be excluded, deferred, or separately recoverable outside the submitted Financial Proposal.

#### **A. Hosting & Infrastructure Costs (Cloud-First Compliant)**

The Financial Proposal shall include Hosting as a separate, clearly identifiable line item titled:

##### **“Hosting & Infrastructure Costs – Pakistan Cloud First Policy Compliant”**

This line item shall cover hosting for all NODE components, including:

- Open Data Portal
- ETL Layer
- API Gateway
- AI/ML Repository & Model Lifecycle Management
- Sandbox Environment
- Any Other proposed

Hosting costs must cover all required environments (e.g., development, testing, staging, production, disaster recovery) for the full contractual duration, including:

- Covering Deliverables 1 through 5
- Covering Deliverable 6 (6A – 6E)

The Proposer shall provide a detailed breakdown of these costs, specifying resources allocated to each environment.

All hosting and infrastructure costs shall be:

- Transparent and fully itemized
- Clearly aligned with the proposed technical architecture
- Based on stated scalability assumptions
- Binding for the entire contractual period

No subsequent adjustments based on underestimated capacity assumptions shall be permitted unless formally approved under contract variation procedures.

## **B. API Gateway Cost Disclosure**

Where the proposed solution includes an API Gateway with tiered access models including public, authenticated, institutional, subscription-based, licensed, or usage-based models — the Financial Proposal shall explicitly disclose:

- All licensing assumptions
- Access tier structures
- Rate limits and usage thresholds
- Any subscription or consumption-based pricing models
- Scaling cost implications
- Any other

All API management costs shall be clearly broken out and aligned with:

- The proposed technical architecture
- Scalability assumptions
- Security and authentication design

Such costs must be included within the total proposed cost and shall comply with the Comprehensive Cost Coverage and SLA cost provisions.

No undisclosed usage-based escalations shall be permitted during the contractual period unless formally approved through contract variation procedures.

## **C. SLA Cost Lock-In and Duration**

One (01) year of SLA services shall be quoted separately, with an option for the Purchaser to extend the same for an additional two (02) years on same terms, conditions and prices. The cost of the first year shall be taken into account for the purpose of overall proposal pricing and financial evaluation only to compare proposals on a like-for-like basis but may or may not be part of the resulting Contract depending upon the project life/ completion and available budget(s). The cost of the second and third years shall not be taken into account for the purpose of overall proposal pricing but binding upon the (successful) Proposer/ Supplier. The Year 1 SLA cost shall not be added to the Contract Price unless and until MoITT issues a separate contract or variation order activating the SLA. MoITT's discretion to activate the SLA is absolute and no compensation shall be due for non-activation.

Depending upon requirements, MOITT may award separate Contract for SLA on annual basis from its own regular/ recurring annual budget and it is agreed by the (successful) Proposer/ Supplier that they will abide by the prices, terms and conditions and other modalities of the SLA if awarded by MOITT after successful completion of all the deliverables and performance obligations under the Contract.

The unit rates and total costs for these SLA services, as proposed in the Financial Proposal and used for evaluation (as applicable), shall remain fixed and shall not be subject to any escalation, indexation, or revision for the duration of the initial one-year period and any subsequent extension period(s).

#### **D. License Validity Commencement**

The validity period of all software licenses included in the Financial Proposal shall commence from the official Go-Live date of the system, as formally certified by the DEEP, and not from the date of contract signing, delivery, or installation. The Supplier shall ensure that the full licensed duration committed under the proposal remains available to the DEEP from the Go-Live date onward.

### **5. Combined Evaluation**

The Purchaser will evaluate and compare the Proposals that have been determined to be substantially responsive.

An Evaluated Proposal Score (B) will be calculated for each responsive Proposal using the following formula, which permits a comprehensive assessment of the evaluated cost and the technical merits of each Proposal:

$$B \equiv \frac{C_{low}}{C} * X * 100 + \frac{T}{T_{high}} * (1 - X) * 100$$

where

$C$  = Evaluated Proposal Price

$C_{low}$  = the lowest of all Evaluated Proposal Prices among responsive Proposals

$T$  = the total Technical Score awarded to the Proposal

$T_{high}$  = the Technical Score achieved by the Proposal that was scored best among all responsive Proposals

$X$  = weight for the Cost as specified in the PDS

The Proposal with the best evaluated Proposal Score (B) among responsive Proposals shall be the Most Advantageous Proposal provided the Proposer was prequalified and/or it was found to be qualified to perform the Contract

## 1. Qualification

| Factor                                         | 1.1 ELIGIBILITY                                                          |                       |                                      |                       |                     |                                         |
|------------------------------------------------|--------------------------------------------------------------------------|-----------------------|--------------------------------------|-----------------------|---------------------|-----------------------------------------|
| Sub-Factor                                     | Criteria                                                                 |                       |                                      |                       |                     | Documentation Required                  |
|                                                | Requirement                                                              | Proposer              |                                      |                       |                     |                                         |
|                                                |                                                                          | Single Entity         | Joint Venture (existing or intended) |                       |                     |                                         |
|                                                |                                                                          |                       | All members combined                 | Each member           | At least one member |                                         |
| 1.1 Nationality                                | Nationality in accordance with ITP 4.4.                                  | Must meet requirement | Must meet requirement                | Must meet requirement | N / A               | Form ELI –1.1 and 1.2, with attachments |
| 1.2 Conflict of Interest                       | No- conflicts of interests as described in ITP 4.2.                      | Must meet requirement | Must meet requirement                | Must meet requirement | N / A               | Letter of Proposal                      |
| 1.3 Bank Ineligibility                         | Not having been declared ineligible by the Bank as described in ITP 4.5. | Must meet requirement | Must meet requirement                | Must meet requirement | N / A               | Letter of Proposal                      |
| 1.4 State owned Entity of the Borrower country | Compliance with conditions of ITP 4.6                                    | Must meet requirement | Must meet requirement                | Must meet requirement | N / A               | Form ELI –1.1 and 1.2, with attachments |

| Factor                                                    | 1.1 ELIGIBILITY                                                                                                                                                                                                                                                      |                       |                                      |                       |                     |                        |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------|-----------------------|---------------------|------------------------|
| Sub-Factor                                                | Criteria                                                                                                                                                                                                                                                             |                       |                                      |                       |                     | Documentation Required |
|                                                           | Requirement                                                                                                                                                                                                                                                          | Proposer              |                                      |                       |                     |                        |
|                                                           |                                                                                                                                                                                                                                                                      | Single Entity         | Joint Venture (existing or intended) |                       |                     |                        |
|                                                           |                                                                                                                                                                                                                                                                      |                       | All members combined                 | Each member           | At least one member |                        |
| 1.1.5 United Nations resolution or Borrower’s country law | Not having been excluded as a result of prohibition in the Borrower’s country laws or official regulations against commercial relations with the Proposer’s country, or by an act of compliance with UN Security Council resolution, both in accordance with ITP 4.8 | Must meet requirement | Must meet requirement                | Must meet requirement | N / A               | Letter of Proposal     |

| Factor                                    | 1.2 HISTORICAL CONTRACT NON-PERFORMANCE                                                                                                       |                                                                     |                                      |                                    |                     |                        |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------|------------------------------------|---------------------|------------------------|
| Sub-Factor                                | Criteria                                                                                                                                      |                                                                     |                                      |                                    |                     | Documentation Required |
|                                           | Requirement                                                                                                                                   | Proposer                                                            |                                      |                                    |                     |                        |
|                                           |                                                                                                                                               | Single Entity                                                       | Joint Venture (existing or intended) |                                    |                     |                        |
|                                           |                                                                                                                                               |                                                                     | All members combined                 | Each member                        | At least one member |                        |
| 1.2.1 History of non-performing contracts | Non-performance of a contract <sup>1</sup> did not occur as a result of Proposer’s default since 1 <sup>st</sup> January 2021.                | Must meet requirement by itself or as member to past or existing JV | Must meet requirement                | Must meet requirement <sup>2</sup> | N / A               | Form CON - 2           |
| 1.2.2 Suspension                          | Not under suspension based on execution of a Proposal Securing Declaration or Proposal Securing Declaration pursuant to ITP 4.7 and ITP 20.10 | Must meet requirement                                               | Must meet requirement                | Must meet requirement              | N / A               | Letter of Proposal     |

<sup>1</sup> Nonperformance, as decided by the Purchaser, shall include all contracts where (a) nonperformance was not challenged by the contractor, including through referral to the dispute resolution mechanism under the respective contract, and (b) contracts that were so challenged but fully settled against the contractor. Nonperformance shall not include contracts where Purchaser decision was overruled by the dispute resolution mechanism. Nonperformance must be based on all information on fully settled disputes or litigation, i.e. dispute or litigation that has been resolved in accordance with the dispute resolution mechanism under the respective contract and where all appeal instances available to the applicant have been exhausted.

<sup>2</sup> This requirement also applies to contracts executed by the Applicant as JV member.

|                                                          |                                                                                                                                                                                                                    |                                                                               |                       |                                                                               |       |                                |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|-----------------------|-------------------------------------------------------------------------------|-------|--------------------------------|
| 1.2.3 Pending Litigation                                 | Proposer's financial position and prospective long-term profitability still sound according to criteria established in 2.3.1 below and assuming that all pending litigation will be resolved against the Proposer. | Must meet requirement by itself or as member to past or existing JV           | Must meet requirement | Must meet requirement                                                         | N / A | Form CON – 2                   |
| 1.2.4 Litigation History                                 | No consistent history of court/arbitral award decisions against the Proposer <sup>3</sup> since 1st January 2021.                                                                                                  | Must meet requirement                                                         | Must meet requirement | Must meet requirement                                                         | N/A   | Form CON – 2                   |
| 1.2.5 Bank's SEA and/or SH Disqualification <sup>4</sup> | At the time of Contract Award, not subject to disqualification by the Bank for non-compliance with SEA/ SH obligations                                                                                             | Must meet requirement (including each subcontractor proposed by the Proposer) | Must meet requirement | Must meet requirement (including each subcontractor proposed by the Proposer) | N/A   | Letter of Proposal, Form CON-3 |

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<sup>3</sup> The Proposer shall provide accurate information on the related Letter of Proposal about any litigation or arbitration resulting from contracts completed or ongoing under its execution over the last five years. A consistent history of awards against the Proposer or any member of a joint venture may result in failure of the Proposal.

| Factor                                        | 1.3 FINANCIAL SITUATION                                                                                                                                                                                                                                                                                   |                       |                                      |                       |                     |                                   |
|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------|-----------------------|---------------------|-----------------------------------|
| Sub-Factor                                    | Criteria                                                                                                                                                                                                                                                                                                  |                       |                                      |                       |                     | Documentation Required            |
|                                               | Requirement                                                                                                                                                                                                                                                                                               | Proposer              |                                      |                       |                     |                                   |
|                                               |                                                                                                                                                                                                                                                                                                           | Single Entity         | Joint Venture (existing or intended) |                       |                     |                                   |
|                                               |                                                                                                                                                                                                                                                                                                           |                       | All members combined                 | Each member           | At least one member |                                   |
| <b>1.3.1 Historical Financial Performance</b> | Submission of audited balance sheets or if not required by the law of the Proposer’s country, other financial statements acceptable to the Purchaser, for the last Three (03) years to demonstrate the current soundness of the Proposers financial position and its prospective long term profitability. | Must meet requirement | Must meet requirement                | Must meet requirement | N / A               | Form FIN – 1.3.1 with attachments |
| <b>1.3.2 Average Annual Turnover</b>          | Minimum average annual turnover of 3.5 million USD, calculated as total certified payments received for contracts in progress or completed, within the last Three (03) Years.                                                                                                                             | Must meet requirement | Must meet requirement                | N/A                   | N/A                 | Form FIN –1.3.2                   |

| Factor                    | 1.3 FINANCIAL SITUATION                                                                                                                                                                                                                                                                 |                       |                                      |             |                     |                        |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------|-------------|---------------------|------------------------|
| Sub-Factor                | Criteria                                                                                                                                                                                                                                                                                |                       |                                      |             |                     | Documentation Required |
|                           | Requirement                                                                                                                                                                                                                                                                             | Proposer              |                                      |             |                     |                        |
|                           |                                                                                                                                                                                                                                                                                         | Single Entity         | Joint Venture (existing or intended) |             |                     |                        |
|                           |                                                                                                                                                                                                                                                                                         |                       | All members combined                 | Each member | At least one member |                        |
| 1.3.3 Financial Resources | The Proposer must demonstrate access to, or availability of, financial resources such as liquid assets, unencumbered real assets, lines of credit, and other financial means, other than any contractual advance payments to meet the following cash-flow requirement: 1.0 Million USD. | Must meet requirement | Must meet requirement                | N/A         | N/A                 | Form FIN –1.3.3        |

| Factor                    | 1.4 EXPERIENCE                                                                                                                                                                                                                                                                                                                                                                                          |                       |                                      |             |                       |                        |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------|-------------|-----------------------|------------------------|
| Sub-Factor                | Criteria                                                                                                                                                                                                                                                                                                                                                                                                |                       |                                      |             |                       | Documentation Required |
|                           | Requirement                                                                                                                                                                                                                                                                                                                                                                                             | Proposer              |                                      |             |                       |                        |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                         | Single Entity         | Joint Venture (existing or intended) |             |                       |                        |
|                           |                                                                                                                                                                                                                                                                                                                                                                                                         |                       | All members combined                 | Each member | At least one member   |                        |
| 1.4.1 General Experience  | Experience under Information System contracts in the role of prime supplier, management contractor, JV member, or subcontractor for at least the last Five (05) years prior to the applications submission deadline.                                                                                                                                                                                    | Must meet requirement | N / A                                | N/A         | Must meet requirement | Form EXP-1.4.1         |
| 1.4.2 Specific Experience | Participation as a prime supplier, management contractor, JV <sup>5</sup> member, sub-contractor, in at least Two (02) contracts within the last five (05) years, each with a value of at least 3.0 Million USD that have been successfully and substantially completed and that are similar to the proposed Information System.<br><br>The similar contract shall mean that the Proposer/ Supplier has | Must meet requirement | Must meet requirements               | N / A       | N/A                   | Form EXP 1.4.2         |

<sup>5</sup> For contracts under which the Proposer participated as a joint venture member or sub-contractor, only the Proposer's share, by value, and role and responsibilities shall be considered to meet this requirement.

| Factor     | 1.4 EXPERIENCE                                                                                                                                                                                                                                                                                                                                                                              |               |                                      |             |                     |                        |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------------------|-------------|---------------------|------------------------|
| Sub-Factor | Criteria                                                                                                                                                                                                                                                                                                                                                                                    |               |                                      |             |                     | Documentation Required |
|            | Requirement                                                                                                                                                                                                                                                                                                                                                                                 | Proposer      |                                      |             |                     |                        |
|            |                                                                                                                                                                                                                                                                                                                                                                                             | Single Entity | Joint Venture (existing or intended) |             |                     |                        |
|            |                                                                                                                                                                                                                                                                                                                                                                                             |               | All members combined                 | Each member | At least one member |                        |
|            | successfully deployed any of the relevant software solution listed in the Technical Specifications/ Purchaser’s Requirements or the similar solutions.<br><br>The successfully completed similar contracts shall be documented and substantiated by a copy of an Operational acceptance certificate (or equivalent documentation satisfactory to the Purchaser) issued by the purchaser(s). |               |                                      |             |                     |                        |

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## Letter of Proposal- Technical Part

*INSTRUCTIONS TO PROPOSERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT*

*The Proposer must prepare this Letter of Proposal on stationery with its letterhead clearly showing the Proposer's complete name and business address.*

*Note: All italicized text is to help Proposers in preparing this form.*

Date of this Proposal submission: *[insert date (as day, month and year) of Proposal submission]*

RFP No.: *[insert number of RFP process]*

Alternative No.: *[insert identification No if this is a Proposal for an alternative, otherwise state "not applicable"]*

We, the undersigned, declare that:

To: *[insert complete name of Purchaser]*

- (a) **No reservations:** We have examined and have no reservations to the request for proposals document, including Addenda issued in accordance with Instructions to Proposers (ITP 8);
- (b) **Eligibility:** We meet the eligibility requirements and have no conflict of interest in accordance with ITP 4;
- (c) **Proposal-Securing Declaration:** We have not been suspended nor declared ineligible by the Purchaser based on execution of a Proposal-Securing Declaration or Proposal-Securing Declaration in the Purchaser's Country in accordance with ITP 4.7;
- (d) **Sexual Exploitation and Abuse (SEA) and/or Sexual Harassment (SH):** *[select the appropriate option from (i) to (v) below and delete the others. In case of JV members and/or subcontractors, indicate the status of disqualification by the Bank of each JV member and/or subcontractor].*

We, including any of our subcontractors:

- (i) [have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.]
- (ii) [are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.]
- (iii) [had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations, and were removed from the disqualification list. An arbitral award on the disqualification case has been made in our favor.]

- (e) **Conformity:** We offer to provide design, supply and installation services in conformity with the request for proposals document of the following: *[insert a brief description of the IS Design, Supply and Installation Services]*;
- (f) **Proposal Validity:** Our Proposal shall be valid until *[insert day, month and year in accordance with ITP 19.1]*, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (g) **Performance Security:** If our Proposal is accepted, we commit to obtain a Performance Security in accordance with the request for proposals document;
- (h) **One Proposal Per Proposer:** We are not submitting any other Proposal(s) as an individual Proposer, and we are not participating in any other Proposal(s) as a Joint Venture member, and meet the requirements of ITP 4.3, other than alternative Proposals submitted in accordance with ITP 13;
- (i) **Suspension and Debarment:** We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the World Bank Group or a debarment imposed by the World Bank Group in accordance with the Agreement for Mutual Enforcement of Debarment Decisions between the World Bank and other development banks. Further, we are not ineligible under the Purchaser's Country laws or official regulations or pursuant to a decision of the United Nations Security Council;
- (j) **State-owned enterprise or institution:** *[select the appropriate option and delete the other: We are not a state-owned enterprise or institution / We are a state-owned enterprise or institution but meet the requirements of ITP 4.6]*;
- (k) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the procurement process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*

| Name of Recipient | Address | Reason | Amount |
|-------------------|---------|--------|--------|
|                   |         |        |        |
|                   |         |        |        |
|                   |         |        |        |
|                   |         |        |        |

*[If none has been paid or is to be paid, indicate "none."]*

- (l) **Binding Contract:** We understand that this Proposal, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

- (m) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated cost Proposal, the Most Advantageous Proposal or any other Proposal that you may receive; and
- (n) **Fraud and Corruption:** We hereby certify that we have taken steps to ensure that no person acting for us or on our behalf engages in any type of Fraud and Corruption.

Name of the Proposer: *\*[insert complete name of the Proposer]*

Name of the person duly authorized to sign the Proposal on behalf of the Proposer: *\*\*[insert complete name of person duly authorized to sign the Proposal]*

Title of the person signing the Proposal: *[insert complete title of the person signing the Proposal]*

Signature of the person named above: *[insert signature of person whose name and capacity are shown above]*

Date signed *[insert number]* day of *[insert month]*, *[insert year]*

\*: In the case of the Proposal submitted by joint venture specify the name of the Joint Venture as Proposer

\*\*: Person signing the Proposal shall have the power of attorney given by the Proposer to be attached with the Proposal

## FORM ELI 1.1.1- PROPOSER INFORMATION FORM

*[Note: The Proposer shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]*

Date: *[insert date (as day, month and year) of Proposal submission]*

RFP No.: *[insert number of Request for Proposals process]*

Alternative No.: *[insert identification No if this is a Proposal for an alternative]  
otherwise state “not applicable”*

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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Proposer's Name <i>[insert Proposer's legal name]</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 2. In case of JV, legal name of each member : <i>[insert legal name of each member in JV]</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 3. Proposer's actual or intended country of registration: <i>[insert actual or intended country of registration]</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4. Proposer's year of registration: <i>[insert Proposer's year of registration]</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5. Proposer's Address in country of registration: <i>[insert Proposer's legal address in country of registration]</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 6. Proposer's Authorized Representative Information<br><br>Name: <i>[insert Authorized Representative's name]</i><br>Address: <i>[insert Authorized Representative's Address]</i><br>Telephone/Fax numbers: <i>[insert Authorized Representative's telephone/fax numbers]</i><br>Email Address: <i>[insert Authorized Representative's email address]</i>                                                                                                                                                                                                                                                                                                                     |
| 7. Attached are copies of original documents of <i>[check the box(es) of the attached original documents]</i><br><br><input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above, in accordance with ITP 4.4.<br><br><input type="checkbox"/> In case of JV, letter of intent to form JV or JV agreement, in accordance with ITP 4.1.<br><br><input type="checkbox"/> In case of state-owned enterprise or institution, in accordance with ITP 4.6 documents establishing: <ul style="list-style-type: none"> <li>• Legal and financial autonomy</li> </ul> |

- Operation under commercial law
  - Establishing that the Proposer is not under the supervision of the Purchaser
8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. *[The successful Proposer shall provide additional information on beneficial ownership, using the Beneficial Ownership Disclosure Form.]*

## FORM ELI 1.1.2- PROPOSER’S JV MEMBERS INFORMATION FORM

*[The Proposer shall fill in this Form in accordance with the instructions indicated below. The following table shall be filled in for the Proposer and for each member of a Joint Venture].*

Date: *[insert date (as day, month and year) of Proposal submission]*

RFP No.: *[insert number of Request for Proposals process]*

Alternative No.: *[insert identification No if this is a Proposal for an alternative, otherwise state “not applicable”]*

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|                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Proposer’s Name: <i>[insert Proposer’s legal name]</i>                                                                                                                                                                                                                                                                                                                                                             |
| 2. Proposer’s JV Member’s name: <i>[insert JV’s Member legal name]</i>                                                                                                                                                                                                                                                                                                                                                |
| 3. Proposer’s JV Member’s country of registration: <i>[insert JV’s Member country of registration]</i>                                                                                                                                                                                                                                                                                                                |
| 4. Proposer’s JV Member’s year of registration: <i>[insert JV’s Member year of registration]</i>                                                                                                                                                                                                                                                                                                                      |
| 5. Proposer’s JV Member’s legal address in country of registration: <i>[insert JV’s Member legal address in country of registration]</i>                                                                                                                                                                                                                                                                              |
| 6. Proposer’s JV Member’s authorized representative information<br>Name: <i>[insert name of JV’s Member authorized representative]</i><br>Address: <i>[insert address of JV’s Member authorized representative]</i><br>Telephone/Fax numbers: <i>[insert telephone/fax numbers of JV’s Member authorized representative]</i><br>Email Address: <i>[insert email address of JV’s Member authorized representative]</i> |

7. Attached are copies of original documents of *[check the box(es) of the attached original documents]*
- ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITP 4.4.
  - ☐ In case of a state-owned enterprise or institution, documents establishing legal and financial autonomy, operation in accordance with commercial law, and they are not under the supervision of the Purchaser in accordance with ITP 4.6.
8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. *[The successful Proposer shall provide additional information on beneficial ownership for each JV member using the Beneficial Ownership Disclosure Form.]*

## FORM CON – 2- HISTORICAL CONTRACT NON-PERFORMANCE, PENDING LITIGATION AND LITIGATION HISTORY

In case a prequalification process was conducted this form should be used only if the information submitted at the time of prequalification requires updating

Proposer's Legal Name: *[insert Proposer's Legal Name]*

Date: \_\_\_\_\_ *[insert date]*

JV member Legal Name: *[insert JV Member Legal Name]*

RFP No.: *[insert RFP number]*

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| Non-Performed Contracts in accordance with Section III, Evaluation and Qualification Criteria                                                                                                                                                                                                                                                                                                     |                                       |                                                                                                                                                                                                                                                                                      |                                                                                    |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| <input type="checkbox"/> Contract non-performance did not occur since 1 <sup>st</sup> January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 1.2.1.<br><input type="checkbox"/> Contract(s) not performed since 1 <sup>st</sup> January <i>[insert year]</i> specified in Section III, Evaluation and Qualification Criteria, requirement 1.2.1 |                                       |                                                                                                                                                                                                                                                                                      |                                                                                    |
| Year                                                                                                                                                                                                                                                                                                                                                                                              | Non-performed portion of contract     | Contract Identification                                                                                                                                                                                                                                                              | Total Contract Amount (current value, currency, exchange rate and US\$ equivalent) |
| <i>[insert year]</i>                                                                                                                                                                                                                                                                                                                                                                              | <i>[insert amount and percentage]</i> | Contract Identification: <i>[indicate complete contract name/ number, and any other identification]</i><br>Name of Employer: <i>[insert full name]</i><br>Address of Employer: <i>[insert street/city/country]</i><br>Reason(s) for nonperformance: <i>[indicate main reason(s)]</i> | <i>[insert amount]</i>                                                             |
| Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria                                                                                                                                                                                                                                                                                                         |                                       |                                                                                                                                                                                                                                                                                      |                                                                                    |
| <input type="checkbox"/> No pending litigation in accordance with Sub-Factor 1.2.3.<br><input type="checkbox"/> Pending litigation in accordance with Sub-Factor 1.2.3 as indicated below.                                                                                                                                                                                                        |                                       |                                                                                                                                                                                                                                                                                      |                                                                                    |

| <b>Year of dispute</b>                                                                                                                                                                     | <b>Amount in dispute (currency)</b>       | <b>Contract Identification</b>                                                                                                                                                                                                                                                                                                                                      | <b>Total Contract Amount (currency), USD Equivalent (exchange rate)</b>               |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <i>[specify year]</i>                                                                                                                                                                      | <i>[specify amount and currency]</i>      | Contract Identification: <i>[insert Contract ID]</i><br>Name of Employer: <i>[insert Name of Employer]</i><br>Address of Employer: <i>[insert Address of Employer]</i><br>Matter in dispute: <i>[describe Matter of dispute]</i><br>Party who initiated the dispute: <i>[specify Initiator of dispute]</i><br>Status of dispute: <i>[specify Status of dispute]</i> | <i>[specify total contract amount and currency, USD equivalent and exchange rate]</i> |
| <i>[specify year]</i>                                                                                                                                                                      | <i>[specify amount and currency]</i>      | Contract Identification: <i>[insert Contract ID]</i><br>Name of Employer: <i>[insert Name of Employer]</i><br>Address of Employer: <i>[insert Address of Employer]</i><br>Matter in dispute: <i>[describe Matter of dispute]</i><br>Party who initiated the dispute: <i>[specify Initiator of dispute]</i><br>Status of dispute: <i>[specify Status of dispute]</i> | <i>[specify total contract amount and currency, USD equivalent and exchange rate]</i> |
| Litigation History in accordance with Section III, Evaluation and Qualification Criteria                                                                                                   |                                           |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
| <input type="checkbox"/> No Litigation History in accordance with Sub-Factor 1.2.4.<br><input type="checkbox"/> Litigation History in accordance with Sub-Factor 1.2.4 as indicated below. |                                           |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
| <b>Year of award</b>                                                                                                                                                                       | <b>Outcome as percentage of Net Worth</b> | <b>Contract Identification</b>                                                                                                                                                                                                                                                                                                                                      | <b>Total Contract Amount (currency), USD Equivalent (exchange rate)</b>               |
| <i>[specify year]</i>                                                                                                                                                                      | <i>[specify percentage of net worth]</i>  | Contract Identification: <i>[insert Contract ID]</i><br>Name of Employer: <i>[insert Name of Employer]</i><br>Address of Employer: <i>[insert Address of Employer]</i>                                                                                                                                                                                              | <i>[specify total contract amount and currency, USD equivalent and exchange rate]</i> |

## FORM CON – 3

### SEXUAL EXPLOITATION AND ABUSE (SEA) AND/OR SEXUAL HARASSMENT PERFORMANCE DECLARATION

*[The following table shall be filled in by the Proposer, each member of a Joint Venture and each subcontractor proposed by the Proposer]*

Proposer's Name: *[insert full name]*

Date: *[insert day, month, year]*

Joint Venture Member's or Subcontractor's Name: *[insert full name]*

RFP No. and title: *[insert RFP number and title]*

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| <b>SEA and/or SH Declaration</b><br><b>in accordance with Section III, Qualification Criteria, and Requirements</b>                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>We:</p> <p><input type="checkbox"/> (a) have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations</p> <p><input type="checkbox"/> (b) are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations</p> <p><input type="checkbox"/> (c) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations, and were removed from the disqualification list. An arbitral award on the disqualification case has been made in our favor.</p> |
| <p><b><i>[If (c) above is applicable, attach evidence of an arbitral award reversing the findings on the issues underlying the disqualification.]</i></b></p>                                                                                                                                                                                                                                                                                                                                                                              |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## FORM EXP 1.4.1- GENERAL EXPERIENCE

Proposer's Legal Name: *[insert Proposer's Legal Name]*

Date: *[insert Date]*

JV Member Legal Name: *[insert JV Member Legal Name]*

RFP No.: *[insert RFP number]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

| <b>Starting Month / Year</b> | <b>Ending Month / Year</b>   | <b>Years *</b>                  | <b>Contract Identification</b>                                                                                                                                                                                                                                             | <b>Role of Proposer</b>                               |
|------------------------------|------------------------------|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| <i>[insert month / year]</i> | <i>[insert month / year]</i> | <i>[insert number of years]</i> | Contract name: <i>[insert Name of Contract ]</i><br>Brief Description of the Information System performed by the Proposer: <i>[describe Information System]</i><br>Name of Purchaser: <i>[insert Name of Purchaser ]</i><br>Address: <i>[insert Address of Purchaser ]</i> | <i>[describe role of Proposer under the contract]</i> |
| <i>[insert month / year]</i> | <i>[insert month / year]</i> | <i>[insert number of years]</i> | Contract name: <i>[insert Name of Contract ]</i><br>Brief Description of the Information System performed by the Proposer: <i>[describe Information System]</i><br>Name of Purchaser: <i>[insert Name of Purchaser ]</i><br>Address: <i>[insert Address of Purchaser ]</i> | <i>[describe role of Proposer under the contract]</i> |
| <i>[insert month / year]</i> | <i>[insert month / year]</i> | <i>[insert number of years]</i> | Contract name: <i>[insert Name of Contract ]</i><br>Brief Description of the Information System performed by the Proposer: <i>[describe Information System]</i><br>Name of Purchaser: <i>[insert Name of Purchaser ]</i><br>Address: <i>[insert Address of Purchaser ]</i> | <i>[describe role of Proposer under the contract]</i> |
| <i>[insert month / year]</i> | <i>[insert month / year]</i> | <i>[insert number of years]</i> | Contract name: <i>[insert Name of Contract ]</i><br>Brief Description of the Information System performed by the Proposer: <i>[describe Information System]</i><br>Name of Purchaser: <i>[insert Name of Purchaser ]</i><br>Address: <i>[insert Address of Purchaser ]</i> | <i>[describe role of Proposer under the contract]</i> |

\*List calendar year for years with contracts with at least nine (9) months activity per year starting with the earliest year

## FORM EXP 1.4.2- SPECIFIC EXPERIENCE

Proposer's Legal Name: *[insert Proposer's Legal Name]*

Date: *[insert Date]*

JV Member Legal Name: *[insert JV Member Legal Name]*

RFP No.: *[insert RFP number]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

|                                                                                    |                                               |                                                      |                                           |
|------------------------------------------------------------------------------------|-----------------------------------------------|------------------------------------------------------|-------------------------------------------|
| <b>Similar Contract Number: ____ of ____ required.</b>                             | <b>Information</b>                            |                                                      |                                           |
| Contract Identification                                                            | <i>[insert Contract ID]</i>                   |                                                      |                                           |
| Award date                                                                         | <i>[insert Date of Award]</i>                 |                                                      |                                           |
| Completion date                                                                    | <i>[insert Date of Completion]</i>            |                                                      |                                           |
|                                                                                    |                                               |                                                      |                                           |
| Role in Contract                                                                   | <input type="checkbox"/><br>Prime<br>Supplier | <input type="checkbox"/><br>Management<br>Contractor | <input type="checkbox"/><br>Subcontractor |
| Total contract amount                                                              |                                               |                                                      |                                           |
| If member in a JV or subcontractor, specify participation of total contract amount |                                               |                                                      |                                           |
| Purchaser's Name:                                                                  | _____                                         |                                                      |                                           |
| Address:                                                                           | _____                                         |                                                      |                                           |
| Telephone/fax number:                                                              | _____                                         |                                                      |                                           |
| E-mail:                                                                            | _____                                         |                                                      |                                           |

## FORM EXP 1.4.2 (CONT.)- SPECIFIC EXPERIENCE (CONT.)

Proposer's Legal Name: *[insert Proposer's Legal Name]*

Date: *[insert Date]*

JV Member Legal Name: *[insert JV Member Legal Name]*

RFP No.: *[insert RFP number]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

| Similar Contract No. <i>[insert specific number]</i> of <i>[insert total number of contracts]</i> required | Information                                                                               |
|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|
| Description of the similarity in accordance with Sub-Factor 1.4.2 of Section III:                          |                                                                                           |
| Amount                                                                                                     | <i>[insert contract amount and currency and USD equivalent and exchange rate]</i>         |
| Geographical Scope                                                                                         | <i>[describe geographic scope of the users of the information system]</i>                 |
| Functional Scope                                                                                           | <i>[describe the functionalities provided by the information system]</i>                  |
| Methods/Technology                                                                                         | <i>[describe methodologies and technologies used to implement the information system]</i> |
| Key Activities                                                                                             | <i>[describe the key activities of the Proposer under the contract]</i>                   |

## FORM CCC- SUMMARY SHEET: CURRENT CONTRACT COMMITMENTS / WORK IN PROGRESS

*[Proposers and each partner to a Joint Venture should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.]*

Proposer's Legal Name: *[insert **Proposer's Legal Name**]*

Date: *[insert **Date**]*

JV Member Legal Name: *[insert **JV Member Legal Name**]*

RFP No.: *[insert **RFP number**]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

| Name of contract                           | Purchaser,<br>contact<br>address/tel./fax                                         | Value of<br>outstanding<br>Information<br>System (current<br>US\$ equivalent)                                         | Estimated<br>completion date                     | Average monthly<br>invoicing over last<br>six months<br>(US\$<br>equivalent/month)  |
|--------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------|
| 1. <i>[insert <b>Name of Contract</b>]</i> | <i>[insert <b>Name of Purchaser, contact address, telephone / fax number</b>]</i> | <i>[insert <b>Total Outstanding Contract Value of the information system in USD equivalent and exchange rate</b>]</i> | <i>[insert <b>Estimated completion date</b>]</i> | <i>[insert <b>Average monthly invoices in USD equivalent and exchange rate</b>]</i> |
| 2. <i>[insert <b>Name of Contract</b>]</i> | <i>[insert <b>Name of Purchaser, contact address, telephone / fax number</b>]</i> | <i>[insert <b>Total Outstanding Contract Value of the information system in USD equivalent and exchange rate</b>]</i> | <i>[insert <b>Estimated completion date</b>]</i> | <i>[insert <b>Average monthly invoices in USD equivalent and exchange rate</b>]</i> |
| 3. <i>[insert <b>Name of Contract</b>]</i> | <i>[insert <b>Name of Purchaser, contact address, telephone / fax number</b>]</i> | <i>[insert <b>Total Outstanding Contract Value of the information system in USD equivalent and exchange rate</b>]</i> | <i>[insert <b>Estimated completion date</b>]</i> | <i>[insert <b>Average monthly invoices in USD equivalent and exchange rate</b>]</i> |
| ...                                        |                                                                                   |                                                                                                                       |                                                  |                                                                                     |

## FORM FIN 1.3.1- FINANCIAL SITUATION: HISTORICAL FINANCIAL PERFORMANCE

To be completed by the Proposer and, if JV, by each member

Proposer's Legal Name: *[insert **Proposer's Legal Name**]*

Date: *[insert **Date**]*

JV Member Legal Name: *[insert **JV Member Legal Name**]*

RFP No.: *[insert **RFP number**]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

| Financial<br>information in<br>US\$ equivalent | Historic information for previous <i>[insert number]</i> years<br>(US\$ equivalent in 000s) |        |        |          |        |      |               |
|------------------------------------------------|---------------------------------------------------------------------------------------------|--------|--------|----------|--------|------|---------------|
|                                                | Year 1                                                                                      | Year 2 | Year 3 | Year ... | Year n | Avg. | Avg.<br>Ratio |
| <b>Information from Balance Sheet</b>          |                                                                                             |        |        |          |        |      |               |
| <b>Total Assets<br/>(TA)</b>                   |                                                                                             |        |        |          |        |      |               |
| <b>Total<br/>Liabilities<br/>(TL)</b>          |                                                                                             |        |        |          |        |      |               |
| <b>Net Worth<br/>(NW)</b>                      |                                                                                             |        |        |          |        |      |               |
| <b>Current Assets<br/>(CA)</b>                 |                                                                                             |        |        |          |        |      |               |
| <b>Current<br/>Liabilities<br/>(CL)</b>        |                                                                                             |        |        |          |        |      |               |
| <b>Information from Income Statement</b>       |                                                                                             |        |        |          |        |      |               |
| <b>Total Revenue<br/>(TR)</b>                  |                                                                                             |        |        |          |        |      |               |
| <b>Profits Before<br/>Taxes (PBT)</b>          |                                                                                             |        |        |          |        |      |               |
|                                                |                                                                                             |        |        |          |        |      |               |

Attached are copies of financial statements (balance sheets, including all related notes, and income statements) for the years required above complying with the following conditions:

- (a) Must reflect the financial situation of the Proposer or member to a JV, and not sister or parent companies
- (b) Historic financial statements must be audited by a certified accountant
- (c) Historic financial statements must be complete, including all notes to the financial statements

- (d) Historic financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted)

## FORM FIN 1.3.2- AVERAGE ANNUAL TURNOVER

*[To be completed by the Proposer and, if JV, by each member]*

Proposer's Legal Name: *[insert Proposer's Legal Name]*

Date: *[insert Date]*

JV Member Legal Name: *[insert JV Member Legal Name]*

RFP No.: *[insert RFP number]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

| <b>Annual turnover data (applicable activities only)</b> |                                     |                                                            |
|----------------------------------------------------------|-------------------------------------|------------------------------------------------------------|
| <b>Year</b>                                              | <b>Amount and Currency</b>          | <b>US\$ equivalent</b>                                     |
| <i>[insert year]</i>                                     | <i>[insert amount and currency]</i> | <i>[insert amount in USD equivalent and exchange rate]</i> |
| <i>[insert year]</i>                                     | <i>[insert amount and currency]</i> | <i>[insert amount in USD equivalent and exchange rate]</i> |
| <i>[insert year]</i>                                     | <i>[insert amount and currency]</i> | <i>[insert amount in USD equivalent and exchange rate]</i> |
| <i>[insert year]</i>                                     | <i>[insert amount and currency]</i> | <i>[insert amount in USD equivalent and exchange rate]</i> |
| <i>[insert year]</i>                                     | <i>[insert amount and currency]</i> | <i>[insert amount in USD equivalent and exchange rate]</i> |
| <i>[insert year]</i>                                     | <i>[insert amount and currency]</i> | <i>[insert amount in USD equivalent and exchange rate]</i> |
| <b>*Average Annual Turnover</b>                          | <i>[insert amount and currency]</i> | <i>[insert amount in USD equivalent and exchange rate]</i> |

\*Average annual turnover calculated as total certified payments received for work in progress or completed, divided by the number of years specified in Section III, Evaluation and Qualification Criteria, Sub-Factor 1.3.2.

## FORM FIN 1.3.3- FINANCIAL RESOURCES

*To be completed by the Proposer and, if JV, by each member*

Proposer's Legal Name: *[insert **Proposer's Legal Name**]*

Date: *[insert **Date**]*

JV Member Legal Name: *[insert **JV Member Legal Name**]*

RFP No.: *[insert **RFP number**]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total cash flow demands of the subject contract or contracts as indicated in Section III, Evaluation and Qualification Criteria

| Source of financing                                         | Amount (US\$ equivalent)                                                          |
|-------------------------------------------------------------|-----------------------------------------------------------------------------------|
| 1. <i>[describe type and source of available financing]</i> | <i>[insert amount of available financing in USD equivalent and exchange rate]</i> |
| 2. <i>[describe type and source of available financing]</i> | <i>[insert amount of available financing in USD equivalent and exchange rate]</i> |
| 3. <i>[describe type and source of available financing]</i> | <i>[insert amount of available financing in USD equivalent and exchange rate]</i> |
| 4. <i>[describe type and source of available financing]</i> | <i>[insert amount of available financing in USD equivalent and exchange rate]</i> |

## PERSONNEL CAPABILITIES- KEY PERSONNEL

*To be completed by the Proposer and, if JV, by each member*

Proposer's Legal Name: *[insert Proposer's Legal Name]*

Date: *[insert Date]*

JV Member Legal Name: *[insert JV Member Legal Name]*

RFP No.: *[insert RFP number]*

Page \_\_\_\_\_ of \_\_\_\_\_ pages

Proposers should provide the names and details of the suitably qualified Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

### Key Personnel

|    |                                                                     |                                                                                                   |
|----|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 1. | Title of position: <i>[insert Title of position / role in team]</i> |                                                                                                   |
|    | Name of candidate: <i>[insert Name of Candidate]</i>                |                                                                                                   |
|    | Duration of appointment:                                            | <i>[insert the whole period (start and end dates) for which this position will be engaged]</i>    |
|    | Time commitment: for this position:                                 | <i>[insert the number of days/week/months/ that has been scheduled for this position]</i>         |
|    | Expected time schedule for this position:                           | <i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i> |
| 2. | Title of position: <i>[insert Title of position / role in team]</i> |                                                                                                   |
|    | Name of candidate: <i>[insert Name of Candidate]</i>                |                                                                                                   |
|    | Duration of appointment:                                            | <i>[insert the whole period (start and end dates) for which this position will be engaged]</i>    |
|    | Time commitment: for this position:                                 | <i>[insert the number of days/week/months/ that has been scheduled for this position]</i>         |
|    | Expected time schedule for this position:                           | <i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i> |

|    |                                                                                   |                                                                                                   |
|----|-----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| 3. | Title of position: <b>Cyber security Expert/s</b><br><i>[Include as required]</i> |                                                                                                   |
|    | Name of candidate: <i>[insert Name of Candidate]</i>                              |                                                                                                   |
|    | Duration of appointment:                                                          | <i>[insert the whole period (start and end dates) for which this position will be engaged]</i>    |
|    | Time commitment: for this position:                                               | <i>[insert the number of days/week/months/ that has been scheduled for this position]</i>         |
|    | Expected time schedule for this position:                                         | <i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i> |

## Candidate Summary

*To be completed by the Proposer and, if JV, by each member*

Proposer's Legal Name: *[insert Proposer's Legal Name]*

Date: *[insert Date]*

JV Member Legal Name: *[insert JV Member Legal Name]*

RFP No.: *[insert RFP number]*

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|                                                                           |                                                           |                                                             |
|---------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------|
| Position; <i>[insert Title of Position]</i>                               |                                                           | Prime <input type="checkbox"/> Alternate                    |
| Candidate information                                                     | Name of candidate <i>[insert Name Candidate]</i>          | Date of birth <i>[insert Date of Birth]</i>                 |
| Professional qualifications <i>[describe Professional qualifications]</i> |                                                           |                                                             |
|                                                                           |                                                           |                                                             |
| Present employment                                                        | Name of Employer <i>[insert Name of Present Employer]</i> |                                                             |
| Address of Employer <i>[insert Address of Present Employer]</i>           |                                                           |                                                             |
| Telephone <i>[insert Telephone of Contact]</i>                            |                                                           | Contact (manager / personnel officer) <i>[insert Name]</i>  |
| Fax <i>[insert fax of Contact]</i>                                        |                                                           | email <i>[insert email of Contact]</i>                      |
| Job title of candidate <i>[insert Job Title Candidate]</i>                |                                                           | Years with present Employer <i>[insert Number of years]</i> |

Summarize professional experience over the last twenty years, in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

| From                 | To                   | Company/Project/ Position/Relevant technical and management experience       |
|----------------------|----------------------|------------------------------------------------------------------------------|
| <i>[insert year]</i> | <i>[insert year]</i> | <i>[describe experience relevant to the proposed Contract under the RFP]</i> |
| <i>[insert year]</i> | <i>[insert year]</i> | <i>[describe experience relevant to the proposed Contract under the RFP]</i> |
| <i>[insert year]</i> | <i>[insert year]</i> | <i>[describe experience relevant to the proposed Contract under the RFP]</i> |
| <i>[insert year]</i> | <i>[insert year]</i> | <i>[describe experience relevant to the proposed Contract under the RFP]</i> |

## CODE OF CONDUCT FOR SUPPLIER’S PERSONNEL FORM

### CODE OF CONDUCT FOR SUPPLIER’S PERSONNEL

We are the Supplier, *[enter name of Supplier]*. We have signed a contract with *[enter name of Purchaser]* for *[enter description of the Information System]*. The Information System will be supplied to and installed at *[enter the Project Site/s]*. Our contract requires us to implement measures to address environmental and social risks.

This Code of Conduct identifies the behavior that we require from Supplier’s Personnel

**Note to the Proposer:**

**The minimum content of the Code of Conduct form as set out by the Purchaser shall not be substantially modified.** However, the Proposer may add requirements as appropriate, including to take into account Contract-specific issues/risks.

The Proposer shall initial and submit the Code of Conduct form as part of its proposal.

employed in the execution of the Contract at the Project Site/s.

Our workplace is an environment where unsafe, offensive, abusive or violent behavior will not be tolerated and where all persons should feel comfortable raising issues or concerns without fear of retaliation.

### REQUIRED CONDUCT

Supplier’s Personnel employed in the execution of the Contract at the Project Site/s shall:

1. carry out his/her duties competently and diligently;
2. comply with this Code of Conduct and all applicable laws, regulations and other requirements, including requirements to protect the health, safety and well-being of other Supplier’s Personnel and any other person;
3. maintain a safe working environment including by:
  - a. ensuring that workplaces, machinery, equipment and processes under each person’s control are safe and without risk to health;
  - b. wearing required personal protective equipment;
  - c. using appropriate measures relating to chemical, physical and biological substances and agents; and
  - d. following applicable emergency operating procedures.

4. report work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she reasonably believes presents an imminent and serious danger to his/her life or health;
5. treat other people with respect, and not discriminate against specific groups such as women, people with disabilities, migrant workers or children;
6. not engage in any form of sexual harassment including unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature with other Supplier's or Purchaser's Personnel;
7. not engage in Sexual Exploitation, which means any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another;
8. not engage in Sexual Abuse, which means the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions;
9. not engage in any form of sexual activity with individuals under the age of 18, except in case of pre-existing marriage;
10. complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, and Sexual Exploitation and Abuse, and Sexual Harassment (SH);
11. report violations of this Code of Conduct; and
12. not retaliate against any person who reports violations of this Code of Conduct, whether to us or the Purchaser, or who makes use of the grievance mechanism for Supplier's Personnel or the project's Grievance Redress Mechanism.

## RAISING CONCERNS

If any person observes behavior that he/she believes may represent a violation of this Code of Conduct, or that otherwise concerns him/her, he/she should raise the issue promptly. This can be done in either of the following ways:

1. Contact [*enter name of the Supplier's Social Expert with relevant experience in handling sexual exploitation, sexual abuse and sexual harassment cases, or if such person is not required under the Contract, another individual designated by the Supplier to handle these matters*] in writing at this address [ ] or by telephone at [ ] or in person at [ ]; or
2. Call [ ] to reach the Supplier's hotline (*if any*) and leave a message.

The person's identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.

There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.

### **CONSEQUENCES OF VIOLATING THE CODE OF CONDUCT**

Any violation of this Code of Conduct by the Supplier's Personnel may result in serious consequences, up to and including termination and possible referral to legal authorities.

FOR SUPPLIER'S PERSONNEL:

I have received a copy of this Code of Conduct written in a language that I comprehend. I understand that if I have any questions about this Code of Conduct, I can contact [*enter name of Supplier's contact person(s) with relevant experience*] requesting an explanation.

Name of Supplier's Personnel: [*insert name*]

Signature: \_\_\_\_\_

Date: (day month year): [*insert date*]

Countersignature of authorized representative of the Supplier:

Signature: \_\_\_\_\_

Date: (day month year): [*insert date*]

**ATTACHMENT 1:** Behaviors constituting SEA and behaviors constituting SH

## **ATTACHMENT 1 TO THE CODE OF CONDUCT FORM**

### **BEHAVIORS CONSTITUTING SEXUAL EXPLOITATION AND ABUSE (SEA) AND BEHAVIORS CONSTITUTING SEXUAL HARASSMENT (SH)**

The following non-exhaustive list is intended to illustrate types of prohibited behaviors.

**(1) Examples of sexual exploitation and abuse** include, but are not limited to:

- A Supplier's Personnel tells a member of the community that he/she can get them jobs related to the project site in exchange for sex.
- A Supplier's Personnel rapes, or otherwise sexually assaults a member of the community.
- A Supplier's Personnel denies a person access to the Project Site/s unless he/she performs a sexual favor.
- A Supplier's Personnel tells a person applying for employment under the Contract that he/she will only hire him/her if he/she has sex with him/her.

**(2) Examples of sexual harassment in a work context**

- A Supplier's Personnel comment on the appearance of another Supplier's Personnel (either positive or negative) and sexual desirability.
- When a Supplier's Personnel complains about comments made by another Supplier's Personnel on his/her appearance, the other Supplier's Personnel comment that he/she is "asking for it" because of how he/she dresses.
- Unwelcome touching of a Supplier's Personnel or Purchaser's Personnel by another Supplier's Personnel.
- A Supplier's Personnel tells another Supplier's Personnel that he/she will get him/her a salary raise, or promotion if he/she sends him/her naked photographs of himself/herself.

## TECHNICAL CAPABILITIES

*[Note: To be completed by the Proposer and, if JV, by each member]*

Proposer's Legal Name: *[insert **Proposer's Legal Name**]*

Date: *[insert **Date**]*

JV Member Legal Name: *[insert **JV Member Legal Name**]*

RFP No.: *[insert **RFP number**]*

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The Proposer shall provide adequate information to demonstrate clearly that it has the technical capability to meet the requirements for the Information System. The Proposer should summarize important certifications, proprietary methodologies, and/or specialized technologies that the Proposer proposes to utilize in the execution of the Contract or Contracts.

## MANUFACTURER’S AUTHORIZATION

*[Note: This authorization should be written on the letterhead of the Manufacturer and be signed by a person with the proper authority to sign documents that are binding on the Manufacturer.]*

Invitation for Proposals Title and No.: *[Purchaser insert: **RFP Title and Number**]*

To: *[Purchaser insert: **Purchaser’s Officer to receive the Manufacture’s Authorization**]*

WHEREAS *[insert: **Name of Manufacturer**]* who are official producers of *[insert: **items of supply by Manufacturer**]* and having production facilities at *[insert: **address of Manufacturer**]* do hereby authorize *[insert: **name of Proposer or Joint Venture**]* located at *[insert: **address of Proposer or Joint Venture**]* (hereinafter, the “Proposer”) to submit a proposal and subsequently negotiate and sign a Contract with you for resale of the following Products produced by us:

We hereby confirm that, in case the request for proposals process results in a Contract between you and the Proposer, the above-listed products will come with our full standard warranty.

Name *[insert: **Name of Officer**]* in the capacity of *[insert: **Title of Officer**]*

Signed \_\_\_\_\_

Duly authorized to sign the authorization for and on behalf of: *[insert: **Name of Manufacturer**]*

Dated this *[insert: **ordinal**]* day of *[insert: **month**]*, *[insert: **year**]*.

*[add Corporate Seal (where appropriate)]*

## SUBCONTRACTOR'S AGREEMENT

**Note:** *This agreement should be written on the letterhead of the Subcontractor and be signed by a person with the proper authority to sign documents that are binding on the Subcontractor.*

Invitation for Proposals Title and No.: *[Purchaser insert: **RFP Title and Number**]*

To: *[Purchaser insert: **Purchaser's Officer to receive the Subcontractor's Agreement**]*

WHEREAS *[ insert: **Name of Subcontractor** ]*, having head offices at *[ insert: **address of Subcontractor** ]*, have been informed by *[ insert: **name of Proposer or Joint Venture** ]* located at *[ insert: **address of Proposer or Joint Venture** ]* (hereinafter, the "Proposer") that it will submit a proposal in which *[ insert: **Name of Subcontractor** ]* will provide *[ insert: **items of supply or services provided by the Subcontractor** ]*. We hereby commit to provide the above named items, in the instance that the Proposal is awarded the Contract.

Name *[insert: **Name of Officer**]* in the capacity of *[insert: **Title of Officer**]*

Signed \_\_\_\_\_

Duly authorized to sign the authorization for and on behalf of: *[insert: **Name of Subcontractor**]*

Dated this *[ insert: **ordinal** ]* day of *[ insert: **month** ]*, *[ insert: **year** ]*.

[add Corporate Seal (where appropriate)]



## INTELLECTUAL PROPERTY FORMS

### **Notes to Proposers on working with the Intellectual Property Forms**

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In accordance with ITP 11.1(j), Proposers must submit, as part of their proposals, lists of all the Software included in the proposal assigned to one of the following categories: (a) System, General-Purpose, or Application Software; (b) Standard or Custom Software; (c) Proprietary or Open Source. Proposers must also submit a list of all Custom Materials. These categorizations are needed to support the Intellectual Property in the GCC and SCC. The Proposer must also include the text of the software licenses for the software titles proposed.

## Software List

|                | (select one per title) |                 |             | (select one per title) |        | (select one per title) |             |
|----------------|------------------------|-----------------|-------------|------------------------|--------|------------------------|-------------|
| Title          | System                 | General-Purpose | Application | Standard               | Custom | Proprietary            | Open Source |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
|                |                        |                 |             |                        |        |                        |             |

**Attachments:** Proposed Software Licenses

**List of Custom Materials**

| Custom Materials                      |
|---------------------------------------|
| <i>[insert Title and description]</i> |
| <i>[insert Title and description]</i> |
| <i>[insert Title and description]</i> |
| <i>[insert Title and description]</i> |
| <i>[insert Title and description]</i> |
|                                       |

---

## **CONFORMANCE OF INFORMATION SYSTEM MATERIALS**

## Format of the Technical Proposal

In accordance with ITP 16.2, the documentary evidence of conformity of the Information System to the request for proposals documents includes (but is not restricted to):

- (a). The Proposer's Preliminary Project Plan, including, but not restricted, to the topics specified in the PDS ITP 16.2. The Preliminary Project Plan should also state the Proposer's assessment of the major responsibilities of the Purchaser and any other involved third parties in System supply and installation, as well as the Proposer's proposed means for coordinating activities by each of the involved parties to avoid delays or interference.
- (b). A written confirmation by the Proposer that, if awarded the Contract, it shall accept responsibility for successful integration and interoperability of all the proposed Information Technologies included in the System, as further specified in the Technical Requirements.
- (c). Item-by-Item Commentary on the Technical Requirements demonstrating the substantial responsiveness of the overall design of the System and the individual Information Technologies, Goods, and Services offered to those Technical Requirements.

In demonstrating the responsiveness of its proposal, the Proposer must use the Technical Responsiveness Checklist (Format). Failure to do so increases significantly the risk that the Proposer's Technical Proposal will be declared technically non-responsive. Among other things, the checklist should contain explicit cross-references to the relevant pages in supporting materials included the Proposer's Technical Proposal.

**Note:** The Technical Requirements are voiced as requirements of the *Supplier* and/or the *System*. The Proposer's response must provide clear evidence for the evaluation team to assess the credibility of the response. A response of "yes" or "will do" is unlikely to convey the credibility of the response. The Proposer should indicate *that* – and to the greatest extent practical – *how* the Proposer would comply with the requirements if awarded the contract. Whenever the technical requirements relate to feature(s) of existing products (e.g., hardware or software), the features should be described and the relevant product literature referenced. When the technical requirements relate to professional services (e.g., analysis, configuration, integration, training, etc.) some effort should be expended to describe how they would be rendered – not just a commitment to perform the [cut-and-paste] requirement. Whenever a technical requirement is for the Supplier to provide certifications (e.g., ISO 9001), copies of these certifications must be included in the Technical Proposal.

**Note:** As required in PDS 11.2 (j), include method statement, management strategies and implementation plans and innovations, to manage cyber security risks.

**Note:** The Manufacturer's Authorizations (and any Subcontractor Agreements) are to be included in Attachment 2 (Proposer Qualifications), in accordance with and ITP 15.

**Note:** As a matter of practice, the contract cannot be awarded to a Proposer whose Technical Proposal deviates (materially) from the Technical Requirements – *on any Technical Requirement*. Such deviations include omissions (e.g., non-responses) and responses that do not meet or exceed the requirement. Extreme care must be exercised in the preparation and presentation of the responses to all the Technical Requirements.

- (d). Supporting materials to underpin the Item-by-item Commentary on the Technical Requirements (e.g., product literature, white-papers, narrative descriptions of technical approaches to be employed, etc.). In the interest of timely proposal evaluation and contract award, Proposers are encouraged not to overload the supporting materials with documents that do not directly address the Purchaser's requirements.
- (e). Any separate and enforceable contract(s) for Recurrent Cost items which the PDS ITP 17.2 required Proposers to propose.

**Note:** To facilitate proposal evaluation and contract award, Proposers encouraged to provide electronic copies of their Technical Proposal – preferably in a format that the evaluation team can extract text from to facilitate the proposal clarification process and to facilitate the preparation of the Proposal Evaluation Report.

**Technical Responsiveness Checklist (Format)**

|                                                                              |                                                                                     |
|------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Tech.<br>Require.<br>No. _                                                   | Technical Requirement:<br><i>[ insert: abbreviated description of Requirement ]</i> |
| Proposer's technical reasons supporting compliance:                          |                                                                                     |
| Proposer's cross references to supporting information in Technical Proposal: |                                                                                     |

## FORM OF PROPOSAL SECURITY (BANK GUARANTEE) – NOT APPLICABLE FOR THIS RFP

*[The bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]*

*[Guarantor letterhead or SWIFT identifier code]*

Beneficiary: *[Purchaser to insert its **name and address**]*

RFP No.: *[Purchaser to insert reference **number for the RFP**]*

Alternative No.: *[Insert identification No if this is a Proposal for an alternative]*

**Date:** *[Insert **date of issue**]*

**PROPOSAL GUARANTEE No.:** *[Insert **guarantee reference number**]*

We have been informed that *[insert **name of the Proposer**, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called “the Applicant”) has submitted or will submit the Beneficiary its proposal (hereinafter called “the Proposal”) for the execution of *[insert **Name of Contract**]* under Request for Proposals No. *[insert **number**]* (“the RFP”).

Furthermore, we understand that, according to the Beneficiary’s, Proposals must be supported by a Proposal guarantee.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert **amount in figures** (**[insert amount in words]**)]* upon receipt by us of the Beneficiary’s complying demand supported by the Beneficiary’s statement, whether in the demand itself or a separate signed document accompanying the demand, stating that either the Applicant:

- (a) has withdrawn its Proposal prior to the Proposal validity expiry date set forth in the Applicant’s Letter of Proposal, or any extended date provided by the Applicant; or
- (b) having been notified of the acceptance of its Proposal by the Beneficiary prior to the expiry date of the Proposal validity or any extension thereof provided by the Applicant has failed to: (i) execute the Contract Agreement, if required, or (ii) furnish the performance security, in accordance with the Instructions to Proposers (“ITP”) of the Beneficiary’s request for proposals document.

This guarantee will expire: (a) if the Applicant is the successful Proposer, upon our receipt of copies of the contract agreement signed by the Applicant and the Performance Security issued to the Beneficiary in relation to such Contract Agreement; or (b) if the Applicant is not the

successful Proposer, upon the earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the request for proposals process; or (ii) twenty-eight days after the expiry date of the Proposal validity.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No. 758.

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*[signature(s)]*

## FORM OF PROPOSAL SECURITY (PROPOSAL BOND) - NOT APPLICABLE FOR THIS RFP

BOND NO. *[insert number]*

BY THIS BOND *[insert Name]* as Principal (hereinafter called “the Principal”), and *[insert Name]*, **authorized to transact business in** *[insert Jurisdiction]*, as Surety (hereinafter called “the Surety”), are held and firmly bound unto *[insert Purchaser Name]* as Obligee (hereinafter called “the Purchaser”) in the sum of *[insert amount in figures]*<sup>1</sup> (*[insert amount in words]*), for the payment of which sum, well and truly to be made, we, the said Principal and Surety, bind ourselves, our successors and assigns, jointly and severally, firmly by these presents.

WHEREAS the Principal has submitted or will submit a written Proposal to the Purchaser dated the *[insert ordinal number]* day of *[insert month]* *[insert year]*, for *[insert name of Contract]* (hereinafter called the “Proposal”).

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal:

- (a) withdraws its Proposal prior to the Proposal validity expiry date set forth in the Principal’s Letter of Proposal, or any extended date provided by the Principal; or
- (b) having been notified of the acceptance of its Proposal by the Purchaser prior to the expiry date of the Proposal validity or any extension thereto provided by the Applicant has failed to; (i) execute the Contract Agreement, or (ii) furnish the Performance Security in accordance with the Instructions to Proposers (“ITP”) of the Purchaser’s request for proposals document.

then the Surety undertakes to immediately pay to the Purchaser up to the above amount upon receipt of the Purchaser’s first written demand, without the Purchaser having to substantiate its demand, provided that in its demand the Purchaser shall state that the demand arises from the occurrence of any of the above events, specifying which event(s) has occurred.

The Surety hereby agrees that its obligation will remain in full force and effect up to and including the date 28 days after the date of expiry of the Proposal validity set forth in the Principal’s Letter of Proposal or extended thereto provided by the Principal.

IN TESTIMONY WHEREOF, the Principal and the Surety have caused these presents to be executed in their respective names this *[insert number]* day of *[insert month]* *[insert year]*.

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<sup>1</sup> The amount of the Bond shall be denominated in the currency of the *Purchaser’s* Country or the equivalent amount in a freely convertible currency.

Principal: \_\_\_\_\_

Surety: \_\_\_\_\_  
Corporate Seal (where appropriate)

\_\_\_\_\_  
*(Signature)*  
*(Printed name and title)*

\_\_\_\_\_  
*(Signature)*  
*(Printed name and title)*

## FORM OF PROPOSAL-SECURING DECLARATION

*[The Proposer shall fill in this Form in accordance with the instructions indicated.]*

Date: *[insert **date** (as day, month and year)]*

Proposal No.: *[insert **number of request for proposals process**]*

Alternative No.: *[insert **identification No if this is a Proposal for an alternative**]*

To: *[insert **complete name of Purchaser**]*

We, the undersigned, declare that:

We understand that, according to your conditions, Proposals must be supported by a Proposal-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding or submitting proposals in any contract with the Purchaser for the period of time specified in Section II – Proposal Data Sheet, if we are in breach of our obligation(s) under the proposal conditions, because we:

- (a) have withdrawn our Proposal prior to the expiry date of the Proposal validity specified in the Letter of Proposal or any extended date provided by us; or
- (b) having been notified of the acceptance of our Proposal by the Purchaser prior to the expiry date of the Proposal validity in the Letter of Proposal or any extended date provided by us, (i) fail to sign the Contract agreement; or (ii) fail or refuse to furnish the Performance Security, if required, in accordance with the ITP.

We understand this Proposal-Securing Declaration shall expire if we are not the successful Proposer, upon the earlier of (i) our receipt of your notification to us of the name of the successful Proposer; or (ii) twenty-eight days after the expiry date of the Proposal validity.

Name of the Proposer\* *[insert **Name of Proposer**]*

Name of the person duly authorized to sign the Proposal on behalf of the Proposer\*\* *[insert **Name of authorized person**]*

Title of the person signing the Proposal *[insert **Title of authorized person**]*

Signature of the person named above \_\_\_\_\_

Date signed *[insert **ordinal number**]* day of *[insert **month**]* , *[insert **year**]*

\*: In the case of the Proposal submitted by joint venture specify the name of the Joint Venture as Proposer

\*\*: Person signing the Proposal shall have the power of attorney given by the Proposer attached to the Proposal

*[Note: In case of a Joint Venture, the Proposal-Securing Declaration must be in the name of all members to the Joint Venture that submits the Proposal.]*

## Letter of Proposal - Financial Part

*INSTRUCTIONS TO PROPOSERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT*

*The Proposer must prepare this Letter of Proposal on stationery with its letterhead clearly showing the Proposer's complete name and business address.*

*Note: All italicized text is to help Proposers in preparing this form.*

**Date of this Proposal submission:** *[insert date (as day, month and year) of Proposal submission]*

**Request for Proposal No.:** *[insert identification]*

**Alternative No.:** *[insert identification No if this is a Proposal for an alternative]*

**To:** *[insert complete name of Purchaser]*

We, the undersigned, hereby submit the second part of our Proposal, the Proposal Price and Priced Activity Schedule. This accompanies the Letter of Proposal- Technical Part.

In submitting our Proposal, we make the following additional declarations:

- (a) **Proposal Validity:** Our Proposal shall be valid until *[insert day, month and year in accordance with ITP 19.1]*, and it shall remain binding upon us and may be accepted at any time on or before this date;
- (b) **Total Price:** The total price of our Proposal, excluding any discounts offered in item (c) below is: *[Insert one of the options below as appropriate]*

*[Option 1, in case of one lot:] Total price is: [insert the total price of the Proposal in words and figures, indicating the various amounts and the respective currencies];*

Or

*[Option 2, in case of multiple lots:] (a) Total price of each lot [insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies]; and (b) Total price of all lots (sum of all lots) [insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies];*

(c) **Discounts:** The discounts offered and the methodology for their application are:

(i) The discounts offered are: *[Specify in detail each discount offered]*

(ii) The exact method of calculations to determine the net price after application of discounts is shown below: *[Specify in detail the method that shall be used to apply the discounts]*;

(d) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the procurement process or execution of the Contract: *[insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity]*.

| Name of Recipient | Address | Reason | Amount |
|-------------------|---------|--------|--------|
|                   |         |        |        |
|                   |         |        |        |
|                   |         |        |        |
|                   |         |        |        |

(If none has been paid or is to be paid, indicate “none.”)

**Name of the Proposer:** *\*[insert complete name of the Proposer]*

**Name of the person duly authorized to sign the Proposal on behalf of the Proposer:** **\*\***  
*[insert complete name of person duly authorized to sign the Proposal]*

**Title of the person signing the Proposal:** *[insert complete title of the person signing the Proposal]*

**Signature of the person named above:** *[insert signature of person whose name and capacity are shown above]*

**Date signed** *[insert date of signing]* **day of** *[insert month]*, *[insert year]*

\*: In the case of the Proposal submitted by a Joint Venture specify the name of the Joint Venture as Proposer.

\*\*: Person signing the Proposal shall have the power of attorney given by the Proposer. The power of attorney shall be attached with the Proposal Schedules

## **PRICE SCHEDULE FORMS**

### **Notes to Proposers on working with the Price Schedules**

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#### **General**

1. The Price Schedules are divided into separate Schedules as follows:
  - 3.1 Grand Summary Cost Table
  - 3.2 Supply and Installation Cost Summary Table
  - 3.3 Recurrent Cost Summary Table
  - 3.4 Supply and Installation Cost Sub-Table(s)
  - 3.5 Recurrent Cost Sub-Tables(s)
  - 3.6 Country of Origin Code Table
2. The Schedules do not generally give a full description of the information technologies to be supplied, installed, and operationally accepted, or the Services to be performed under each item. However, it is assumed that Proposers shall have read the Technical Requirements and other sections of these request for proposals documents to ascertain the full scope of the requirements associated with each item prior to filling in the rates and prices. The quoted rates and prices shall be deemed to cover the full scope of these Technical Requirements, as well as overhead and profit.
3. If Proposers are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with the Instructions to Proposers in the request for proposals documents prior to submitting their proposal.

#### **Pricing**

4. Prices shall be filled in indelible ink, and any alterations necessary due to errors, etc., shall be initialed by the Proposer. As specified in the Proposal Data Sheet, prices shall be fixed and firm for the duration of the Contract.
5. Proposal prices shall be quoted in the manner indicated and in the currencies specified in ITP 18.1 and ITP 18.2. Prices must correspond to items of the scope and quality defined in the Technical Requirements or elsewhere in these request for proposals documents.
6. The Proposer must exercise great care in preparing its calculations, since there is no opportunity to correct errors once the deadline for submission of proposals has passed. A single error in specifying a unit price can therefore change a Proposer's overall total proposal price substantially, make the proposal noncompetitive, or subject the Proposer to possible loss. The Purchaser will correct any arithmetic error in accordance with the provisions of ITP 32.
7. Payments will be made to the Supplier in the currency or currencies indicated under each respective item. As specified in ITP 18.2, no more than three foreign currencies may be used.

### 3.1 Grand Summary Cost Table

|    |                                                                                 | <i>[ insert: <b>Local</b><br/><b>Currency</b> ]<br/>Price</i> | <i>[ insert: <b>Foreign</b><br/><b>Currency</b>    <b>A</b> ]<br/>Price</i> | <i>[ insert: <b>Foreign</b><br/><b>Currency</b>    <b>B</b> ]<br/>Price</i> | <i>[ insert: <b>Foreign</b><br/><b>Currency</b>    <b>C</b> ]<br/>Price</i> |
|----|---------------------------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------|
|    |                                                                                 |                                                               |                                                                             |                                                                             |                                                                             |
| 1. | Supply and Installation Costs (from Supply and Installation Cost Summary Table) |                                                               |                                                                             |                                                                             |                                                                             |
|    |                                                                                 |                                                               |                                                                             |                                                                             |                                                                             |
| 2. | Recurrent Costs (from Recurrent Cost Summary Table)                             |                                                               |                                                                             |                                                                             |                                                                             |
|    |                                                                                 |                                                               |                                                                             |                                                                             |                                                                             |
|    |                                                                                 |                                                               |                                                                             |                                                                             |                                                                             |
|    |                                                                                 |                                                               |                                                                             |                                                                             |                                                                             |
| 4. | Grand Totals (to Proposal Submission Form)                                      |                                                               |                                                                             |                                                                             |                                                                             |

**Note:** The proposer shall ensure and hereby agrees that the price(s) is inclusive of all the direct and indirect costs and taxes (as applicable and deductible) as per ITP 17 Proposal Prices.

|                                   |  |  |
|-----------------------------------|--|--|
|                                   |  |  |
| Name of Proposer:                 |  |  |
|                                   |  |  |
| Authorized Signature of Proposer: |  |  |

### 3.2 Supply and Installation Cost Summary Table

Costs MUST reflect prices and rates quoted in accordance with ITP 17 and 18.

|                                |                  |                                            | Supply & Installation Prices            |                                                     |                                             |                                             |                                             |
|--------------------------------|------------------|--------------------------------------------|-----------------------------------------|-----------------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
|                                |                  |                                            | Locally supplied items                  | Items supplied from outside the Purchaser's Country |                                             |                                             |                                             |
| Line Item No.                  | Subsystem / Item | Supply and Installation Cost Sub-Table No. | [ insert: <i>Local Currency</i> ] Price | [ insert: <i>Local Currency</i> ] Price             | [ insert: <i>Foreign Currency A</i> ] Price | [ insert: <i>Foreign Currency B</i> ] Price | [ insert: <i>Foreign Currency C</i> ] Price |
| 0                              | Project Plan     | --                                         | --                                      | --                                                  | --                                          | --                                          | --                                          |
| 1                              | Subsystem 1      | 1                                          |                                         |                                                     |                                             |                                             |                                             |
| SUBTOTALS                      |                  |                                            |                                         |                                                     |                                             |                                             |                                             |
| TOTAL (To Grand Summary Table) |                  |                                            |                                         |                                                     |                                             |                                             |                                             |

**Note:** -- indicates not applicable. -- Indicates repetition of table entry above. Refer to the relevant Supply and Installation Cost Sub-Table for the specific components that constitute each Subsystem or line item in this summary table

|                                   |  |  |
|-----------------------------------|--|--|
|                                   |  |  |
| Name of Proposer:                 |  |  |
|                                   |  |  |
| Authorized Signature of Proposer: |  |  |
|                                   |  |  |

### 3.3 Recurrent Cost Summary Table

Costs MUST reflect prices and rates quoted in accordance with ITP 17 and ITP 18.

| <b>Line<br/>Item No.</b> | <b>Subsystem / Item</b>                                 | <b>Recurrent<br/>Cost Sub-Table No.</b> | <i>[ insert:<br/>Local<br/>Currency ]<br/>Price</i> | <i>[ insert:<br/>Foreign<br/>Currency A ]<br/>Price</i> | <i>[ insert:<br/>Foreign<br/>Currency B ]<br/>Price</i> | <i>[ insert:<br/>Foreign<br/>Currency C ]<br/>Price</i> |
|--------------------------|---------------------------------------------------------|-----------------------------------------|-----------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| A                        | Support and Managed Services                            |                                         |                                                     |                                                         |                                                         |                                                         |
| y.1                      | SLA (Support and Managed Services of complete solution) |                                         |                                                     |                                                         |                                                         |                                                         |
|                          |                                                         |                                         |                                                     |                                                         |                                                         |                                                         |
|                          |                                                         |                                         |                                                     |                                                         |                                                         |                                                         |
|                          |                                                         |                                         |                                                     |                                                         |                                                         |                                                         |
|                          |                                                         |                                         |                                                     |                                                         |                                                         |                                                         |
|                          | Subtotals (to Grand Summary Table)                      |                                         |                                                     |                                                         |                                                         |                                                         |

**Note:** Refer to the relevant Recurrent Cost Sub-Tables for the specific components that constitute the Subsystem or line item in this summary table.

|                                   |  |  |
|-----------------------------------|--|--|
|                                   |  |  |
| Name of Proposer:                 |  |  |
|                                   |  |  |
| Authorized Signature of Proposer: |  |  |



[illegible]

[illegible]

[illegible]



|                                                                                           |                                               |                        |          | Unit Prices / Rates               |                                               |                                       |                                       |                                       | Total Prices                      |                                               |                                       |                                       |                                       |
|-------------------------------------------------------------------------------------------|-----------------------------------------------|------------------------|----------|-----------------------------------|-----------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|-----------------------------------|-----------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
|                                                                                           |                                               |                        |          | Supplied Locally                  | Supplied from outside the Purchaser's Country |                                       |                                       |                                       | Supplied Locally                  | Supplied from outside the Purchaser's Country |                                       |                                       |                                       |
| Component No.                                                                             | Component Description                         | Country of Origin Code | Quantity | <i>[ insert: local currency ]</i> | <i>[ insert: local currency ]</i>             | <i>[ insert: foreign currency A ]</i> | <i>[ insert: foreign currency B ]</i> | <i>[ insert: foreign currency C ]</i> | <i>[ insert: local currency ]</i> | <i>[ insert: local currency ]</i>             | <i>[ insert: foreign currency A ]</i> | <i>[ insert: foreign currency B ]</i> | <i>[ insert: foreign currency C ]</i> |
| 2.22                                                                                      | Training and Knowledge Transfer Lead          |                        | 3        |                                   |                                               |                                       |                                       |                                       |                                   |                                               |                                       |                                       |                                       |
| 2.23                                                                                      | Data Scientist                                |                        | 1        |                                   |                                               |                                       |                                       |                                       |                                   |                                               |                                       |                                       |                                       |
| 3                                                                                         | Other required resources                      |                        |          |                                   |                                               |                                       |                                       |                                       |                                   |                                               |                                       |                                       |                                       |
| 4                                                                                         | Licensing (post acceptance of deliverable 05) |                        |          |                                   |                                               |                                       |                                       |                                       |                                   |                                               |                                       |                                       |                                       |
| Subtotals (to <i>[ insert: line item ]</i> of Supply and Installation Cost Summary Table) |                                               |                        |          |                                   |                                               |                                       |                                       |                                       |                                   |                                               |                                       |                                       |                                       |

**Note:** - - indicates not applicable.

|                                   |  |
|-----------------------------------|--|
|                                   |  |
| Name of Proposer:                 |  |
|                                   |  |
| Authorized Signature of Proposer: |  |

### 3.5 Recurrent Cost Sub-Table *[insert: identifying number] -- Warranty Period*

Lot number: *[if a multi-lot procurement, insert: lot number, otherwise state “single lot procurement”]*

Line item number: *[specify: relevant line item number from the Recurrent Cost Summary Table – (e.g., y.1)]*

Currency: *[specify: the currency of the Recurrent Costs in which the costs expressed in this Sub-Table are expressed]*

*[As necessary for operation of the System, specify: the detailed components and quantities in the Sub-Table below for the line item specified above, modifying the sample components and sample table entries as needed. Repeat the Sub-Table as needed to cover each and every line item in the Recurrent Cost Summary Table that requires elaboration. ]*

Costs MUST reflect prices and rates quoted in accordance with ITP 17 and ITP 18.

|                                                                                                                             |           | Maximum all-inclusive costs (for costs in <i>[insert: currency]</i> ) |    |    |    |    |   |                                         |
|-----------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------------------------------|----|----|----|----|---|-----------------------------------------|
| Component No.                                                                                                               | Component | Y1                                                                    | Y2 | Y3 | Y4 | Y5 | - | Sub-total for <i>[insert: currency]</i> |
| 1                                                                                                                           |           |                                                                       |    |    |    |    |   |                                         |
| Cumulative Subtotal (to <i>[insert: currency]</i> entry for <i>[insert: line item]</i> in the Recurrent Cost Summary Table) |           |                                                                       |    |    |    |    |   |                                         |

|                                   |  |  |
|-----------------------------------|--|--|
| Name of Proposer:                 |  |  |
|                                   |  |  |
| Authorized Signature of Proposer: |  |  |
|                                   |  |  |

### 3.6 Country of Origin Code Table

[illegible]



## SECTION V - ELIGIBLE COUNTRIES

### Eligibility for the Provision of Information System

In reference to ITP 4.8 and ITP 5.1, for the information of the Proposers, at the present time firms and information systems from the following countries are excluded from this procurement process:

Under ITP 4.8(a) and ITP 5.1: *“none”*.

Under ITP 4.8(b) and ITP 5.1: *“none”*.



## **SECTION VI - FRAUD AND CORRUPTION**

**(Section VI shall not be modified)**

### **1. Purpose**

- 1.1 The Bank's Anti-Corruption Guidelines and this annex apply with respect to procurement under Bank Investment Project Financing operations.

### **2. Requirements**

- 2.1 The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption.

- 2.2 To this end, the Bank:

- a. Defines, for the purposes of this provision, the terms set forth below as follows:
  - i. “corrupt practice” is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - ii. “fraudulent practice” is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
  - iii. “collusive practice” is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
  - iv. “coercive practice” is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
  - v. “obstructive practice” is:
    - (a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
    - (b) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under paragraph 2.2 e. below.
- b. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-

contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;

- c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- d. Pursuant to the Bank's Anti-Corruption Guidelines, and in accordance with the Bank's prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner;<sup>1</sup> (ii) to be a nominated<sup>2</sup> sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;
- e. Requires that a clause be included in bidding/request for proposals documents and in contracts financed by a Bank loan, requiring (i) bidders (applicants/proposers), consultants, contractors, and suppliers, and their sub-contractors, sub-consultants, service providers, suppliers, agents, personnel, permit the Bank to inspect<sup>3</sup> all accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the Bank.

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<sup>1</sup> For the avoidance of doubt, a sanctioned party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

<sup>2</sup> A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

<sup>3</sup> Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.

# **PART 2 – PURCHASER’S REQUIREMENTS**

## **SECTION VII - REQUIREMENTS OF THE INFORMATION SYSTEM**

**(INCLUDING TECHNICAL REQUIREMENTS, IMPLEMENTATION SCHEDULE,  
SYSTEM INVENTORY TABLES, BACKGROUND AND INFORMATIONAL  
MATERIALS)**

## Technical Requirements

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## A. ACRONYMS USED IN THE TECHNICAL REQUIREMENTS

### 0.1 Acronym Table

| S# | Term     | Explanation                                       |
|----|----------|---------------------------------------------------|
|    | bps      | bits per second                                   |
|    | cps      | characters per second                             |
|    | DBMS     | Database Management System                        |
|    | DOS      | Disk Operating System                             |
|    | dpi      | dots per inch                                     |
|    | Ethernet | IEEE 802.3 Standard LAN protocol                  |
|    | GB       | gigabyte                                          |
|    | Hz       | Hertz (cycles per second)                         |
|    | IEEE     | Institute of Electrical and Electronics Engineers |
|    | ISO      | International Standards Organization              |
|    | KB       | kilobyte                                          |
|    | kVA      | Kilovolt ampere                                   |
|    | LAN      | Local area network                                |
|    | lpi      | lines per inch                                    |
|    | lpm      | lines per minute                                  |
|    | MB       | megabyte                                          |
|    | MTBF     | Mean time between failures                        |
|    | NIC      | Network interface card                            |
|    | NOS      | Network operating system                          |
|    | ODBC     | Open Database Connectivity                        |
|    | OLE      | Object Linking and Embedding                      |
|    | OS       | Operating system                                  |
|    | PCL      | Printer Command Language                          |
|    | Ppm      | pages per minute                                  |
|    | PS       | PostScript -- Adobe page description language     |
|    | RAID     | Redundant array of inexpensive disks              |
|    | RAM      | Random access memory                              |
|    | RISC     | Reduced instruction-set computer                  |
|    | SCSI     | Small Computer System Interface                   |

| <b>S#</b> | <b>Term</b> | <b>Explanation</b>                                |
|-----------|-------------|---------------------------------------------------|
|           |             |                                                   |
|           | SNMP        | Simple Network Management Protocol                |
|           | SQL         | Structured Query Language                         |
|           | TCP/IP      | Transmission Control Protocol / Internet Protocol |
|           | V           | Volt                                              |
|           | WLAN        | Wireless LAN                                      |

## B. FUNCTIONAL, ARCHITECTURAL AND PERFORMANCE REQUIREMENTS

### 1. Objectives of the Assignment

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The Government of Pakistan, through the Digital Economy Enhancement Project (DEEP), intends to design, develop, and implement a comprehensive Web-Based National Open Data Portal and an integrated Sandbox (developer and regulatory) along with Data Extraction, Transformation and Integration Layer, API Gateway and Ai/ML Analytical Model Library. This integrated platform will serve as the central, trusted access point for high-value government data, transforming it into a strategic asset for national development. The platform shall be built on API-first, cloud-native principles and ensure full interoperability with existing and planned national digital infrastructure, including the National Data Exchange Layer (NDEL) and Digital ID systems. The overarching goal is to foster a data-driven culture that enhances transparent governance, stimulates economic innovation, and improves public service delivery across all sectors of the economy and society.

A detailed 'As-Is' analysis of the current data landscape, including the number and readiness of participating agencies, dataset inventory, and metadata quality, shall be conducted by the Supplier as part of Deliverable 1 (Project Foundation Pack) to inform the detailed solution design.

To mitigate implementation risk and ensure early delivery of value, the platform shall be developed and deployed using a **modular, phased approach**. The system architecture is designed to support this, with logical modules (ETL, Portal, API Gateway, Sandbox, AI/ML Repository) capable of independent implementation. Phase 1 shall constitute the core data publication platform (ETL Module, Open Data Portal Module, and Basic API Gateway). Acceptance of Phase 1 is a mandatory precondition for proceeding to subsequent phases. This phased strategy is a non-negotiable risk-mitigation measure.

#### 1.1 Foundation: Establishing a Centralized, Trusted Data Ecosystem

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- To establish a centralized, authoritative data ecosystem that breaks down information silos across federal and provincial government entities, making non-sensitive data accessible in standardized, machine-readable formats for citizens, businesses, researchers, and developers.
- To leverage cutting-edge, cloud-native technology to automate the entire data lifecycle—from extraction and standardization from diverse source systems to publication, discovery, and consumption—through a robust Data Transformation Layer and a secure API Gateway.

#### 1.2 Governance: Enhancing Transparency and Accountability

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- To enhance transparent and accountable governance by proactively publishing key datasets on public spending, procurement, welfare programs, and government performance, thereby building citizen trust and enabling public oversight.

- To provide integrated support for a wide range of activities including data curation, user management, comprehensive analytics, and monitoring & evaluation, while ensuring the highest standards of data security, integrity, and confidentiality.
- To maintain a complete data provenance and audit trail that can be readily analyzed for performance monitoring, quality assurance, and impact assessment.

### 1.3 Interoperability: Building a Unified Digital Infrastructure

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- To build on, modular architecture that ensures long-term sustainability, and has the inherent capability to integrate with third-party platforms and international data networks.
- To provide full interoperability and integrated data presentation for end-users, alongside powerful business intelligence and analytics tools for government administrators and policymakers.

### 1.4 Innovation: Empowering the Private Sector and Academia

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- To foster an inclusive innovation ecosystem by providing a secure, browser-based Developer Sandbox, equipped with pre-configured tools and datasets, thereby reducing barriers for entrepreneurs, startups, and students to build data-driven applications and services.
- To enable efficient, data-driven public services and evidence-based policymaking across critical sectors such as health, education, and transportation by providing high-quality, timely data to officials, planners, and civil society.
- To positively impact the nation’s digital transformation by providing faster, more efficient access to information, thereby catalyzing civic innovation, academic research, and private-sector growth.

### 1.5 AI Enablement: Leveraging Artificial Intelligence and Data Innovation

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- To empower data scientists, researchers, and startups to **integrate and validate AI models** (e.g., predictive analytics, natural language processing, image recognition) directly within the Developer Sandbox using anonymized datasets, pre-configured AI libraries, and compute resources.
- To facilitate the creation of **AI-driven public service prototypes**, such as automated grievance handling, predictive healthcare analytics, smart agriculture forecasting, and mobility optimization, leveraging government datasets exposed through standardized APIs.
- To integrate **Machine Learning Operations (MLOps)** capabilities within the Developer Sandbox, allowing for continuous experimentation, model versioning, validation, and deployment in a controlled and auditable environment.
- To promote **AI-based data enrichment**, where open datasets can be automatically classified, cleaned, or augmented using AI models—enhancing dataset quality, usability, and interoperability across government systems.
- To incorporate **AI-assisted decision support systems** for policymakers by embedding analytics dashboards and intelligent insights within the National Open Data Portal, helping visualize trends, detect anomalies, and forecast socio-economic indicators.

- To ensure the **ethical and transparent use of AI** by embedding privacy-preserving mechanisms, bias detection, explainability tools, and AI governance frameworks directly into the platform’s workflow.
- To align national AI capacity-building efforts by providing a practical environment within the Sandbox for academic research, innovation challenges, and AI hackathons, fostering the next generation of data scientists and civic technologists.
- To position Pakistan’s Open Data and Developer Sandbox ecosystem as a regional AI innovation hub, demonstrating how open government data can fuel AI-based economic growth and public sector transformation.

## 1.6 National Vision Alignment: Advancing Digital Nation Pakistan Act, 2025

To help achieve the vision of the Digital Nation Pakistan Act, 2025, by establishing a foundational pillar of the national Digital Public Infrastructure (DPI) that empowers citizens, stimulates the digital economy, and positions Pakistan as a hub for data-driven innovation.

## 1.7 Legal and Regulatory Requirements to be met by the Information System

The entire National Open Data Platform ecosystem shall comply with the following legal and regulatory requirements but not limited to:

### 1.7.1 National Mandates:

- **Digital Nation Pakistan Act, 2025:** The system shall operationalize the vision of a digital nation, serving as a foundational pillar for digital economy and governance.
- **Pakistan First Cloud Policy:** All cloud hosting analysis, selection, and deployment must strictly adhere to this policy.
- **National Data Governance Policy & Standards:** The entire solution shall follow and implement the National Data Governance Policy & Standards.
- **Metadata Standards:** Implementation of a metadata standards described in National Data Governance Policy & Standards.
- Any additional national data standards that may be required to achieve the intended outcomes of the system.

### 1.7.2 International & Industry Standards:

- **Digital Accessibility:** Full compliance with Web Content Accessibility Guidelines (WCAG) 2.1 Level AA for all public and administrative interfaces, verified through an independent audit.
- **API Standards:** Adoption of API-First design principles and modern RESTful standards.

### 1.7.3 Information Security Standards:

- Full compliance with **Pakistan Security Standards (PSS)** aligned and compatible with global benchmarks like US FIPS 140 and common criteria (ISO 15408) notified by NCERT (National Cyber Emergency Response Team).
- Adherence to **OWASP Top 10** for web application security.
- Alignment with **NIST Cybersecurity frameworks** for a defence-in-depth strategy.
- Audit against **ISO/IEC 27001** control objectives.

- Any other IS security standards / measures required by the information system and associated systems directly or indirectly.

## **1.8 Business Function Requirements to be met by the Information System**

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### **1.8.1 Data Management System (National Open Data Portal)**

#### **1.8.1.1 Data Publishing & Management:**

- Multi-format data ingestion supporting API-based harvesting, manual upload, and harvesting from other data portals.
- Automated extraction and pre-population of technical metadata upon upload.
- Guided, validated forms for descriptive metadata using a mandatory metadata standard.
- Configurable data validation rules and automatic data previews (tabular views, map visualizations).
- Full version history and provenance tracking for all datasets and their resources.

#### **1.8.1.2 Public Data Discovery & Consumption:**

- Advanced, faceted search engine with filtering by keyword, category, organization, format, license, and geospatial extent.
- Integrated spatial search interface allowing users to draw a bounding box on a map to discover relevant datasets.
- Interactive data exploration through basic charting, graphing, and map visualization tools.
- Saved searches and email alert subscriptions for new datasets matching user criteria.

#### **1.8.1.3 Data Access and Interoperability:**

- A comprehensive, well-documented RESTful API providing programmatic access to all catalog functions, metadata, and data.
- Direct SQL-like querying capabilities for remote filtering and sorting of data via API.
- Support for machine-readable metadata exports (RDF, XML, Turtle, JSON-LD).
- Embeddable dataset visualizations and content for third-party websites.

### **1.8.2 Developer Sandbox**

#### **1.8.2.1 Workspace Provisioning:**

- On-demand, containerized, and isolated developer workspaces.
- Pre-defined, version-controlled workspace "stacks" pre-loaded with programming languages (Python, R, Java, Node.js), frameworks, and data science libraries.
- Must have MFA and Single Sign On (SSO) functionality

#### **1.8.2.2 Integrated Development Experience:**

- Universal, browser-based Integrated Development Environment (IDE) with syntax highlighting, code completion, and debugging tools.
- Integrated Linux-based terminal and native Git source control integration.
- Functionality to build, run, and debug applications entirely within the cloud environment.

### **1.8.2.3 Integrated Data & API Ecosystem:**

- Pre-configured access to the National Open Data Portal's APIs and a library of curated datasets.
- Integrated API explorer and a secure mechanism for developers to generate and manage their API keys.
- Workspace snapshotting and sharing via URL for collaboration and issue reproduction.

## **1.8.3 Data Extraction, Standardization, and Transformation Layer**

### **1.8.3.1 Source System Analysis & Connector Framework:**

A secure layer for connecting to and extracting data from diverse sources (APIs, databases, SFTP, file shares).

### **1.8.3.2 ETL/ELT Pipeline:**

A robust, orchestrated data pipelines for automating the end-to-end data flow from source to publication.

### **1.8.3.3 Data Standardization & Transformation Logic:**

- Automated data validation, cleansing, and quality checks.
- Transformation of heterogeneous data into unified, canonical formats (JSON/CSV) using defined schema mappings.
- Automated metadata enhancement and provenance tracking.

### **1.8.3.4 Integration:**

An automated process for injecting standardized data and its associated metadata into the National Open Data Portal's data store and catalog.

## **1.8.4 API Gateway Implementation**

### **1.8.4.1 Centralized API Management & Routing:**

A single, unified entry point (gateway) for all programmatic access to the platform's data and services, with dynamic request routing and API versioning support.

### **1.8.4.2 Security, Authentication, and Authorization:**

- Secure API Key management, with support for OAuth 2.0 / OpenID Connect.
- Enforcement of fine-grained access control policies and threat protection against OWASP Top 10 vulnerabilities.

### **1.8.4.3 Traffic Management:**

Configurable rate limiting, throttling, and load balancing to ensure fair usage and protect backend services.

### **1.8.4.4 Developer Experience & Ecosystem:**

- A dedicated developer portal serving as the hub for interactive API documentation and key management.
- Configuration to provide sample/test data to the Developer Sandbox environment.

## **1.8.5 AI/ML Analytical Model Library**

### **1.8.5.1 Centralized Model Repository**

Provide a structured registry for storing, cataloguing, and managing metadata of AI/ML models, including version, author, source dataset references, performance metrics, and validation status.

### **1.8.5.2 Model Lifecycle Management**

Enable full lifecycle management (registration, approval, versioning, deprecation) of AI/ML models within a controlled governance workflow.

### **1.8.5.3 Metadata and Documentation Standards**

Enforce standardized metadata schemas for all registered models, describing algorithm type, input/output schema, training dataset, accuracy measures, and ethical considerations.

### **1.8.5.4 Access and Discovery**

Provide secure search, filtering, and discovery features allowing authorized users to browse models by category, use case, or dataset type.

### **1.8.5.5 Integration with Developer Sandbox**

Ensure seamless API-level integration with the Developer Sandbox so that innovators, startups, and researchers can download, test, and deploy models within sandboxed or private environments.

### **1.8.5.6 Secure API Exposure**

Expose all model-related functions (registration, metadata retrieval, download) via secure, token-authenticated RESTful APIs conforming to the platform’s API Gateway and IAM policies.

### **1.8.5.7 Data-Agnostic and Technology-Neutral Design**

Design the Library to store only model artifacts and metadata, not training or inference data, ensuring compatibility with multiple frameworks (e.g., TensorFlow, PyTorch, scikit-learn).

### **1.8.5.8 Governance and Auditability**

Include audit logging for all model submissions, approvals, downloads, and updates, ensuring traceability and compliance with government data policies.

### **1.8.5.9 Model Validation and Certification Workflow**

Implement a configurable review workflow enabling subject-matter experts to validate and certify models before public or institutional release.

### **1.8.5.10 Ethical and Responsible AI Compliance**

Require documentation of data sources, fairness assessments, and bias-mitigation measures as part of model registration.

### **1.8.5.11 Version Control and Provenance**

Maintain complete lineage of each model version, capturing dependencies, associated datasets, and changes over time.

### **1.8.5.12 Ownership and Custom-developed source code Transfer**

Ensure full custom-developed source code, configuration scripts, and documentation of the Library are delivered to and owned by MoITT, allowing future customization and sustainability.

### **1.8.5.13 Scalability and Extensibility**

Design the Library using modular principles to accommodate future integration with external innovation hubs, AI research networks, or national data platforms.

## 1.9 Architectural Requirements to be met by the Information System

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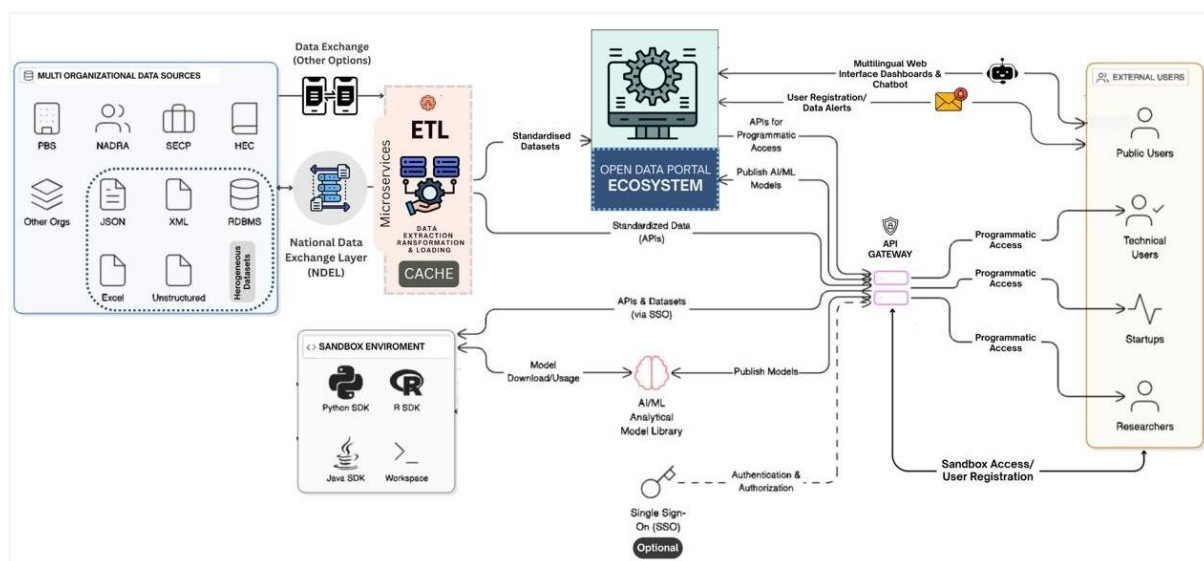
### 1.9.1 System Architecture

The proposed solution architecture SHALL be designed as a **modular, cloud-native platform composed of loosely coupled but fully interoperable components**, each responsible for a specific functional role within the overall data ecosystem. Rather than operating as a monolithic application, the platform SHALL adopt a **microservices-oriented architecture** in which the core components—namely the **Data Extraction, Transformation and Loading (ETL) Layer, National Open Data Portal, API Gateway, AI/ML Analytical Model Library, and Developer Sandbox Environment**—operate as independent but interconnected modules. These components SHALL communicate through standardized interfaces and APIs to collectively support a complete end-to-end data lifecycle. This modular approach SHALL ensure flexibility, scalability, maintainability, and the ability to evolve individual components without disrupting the overall system.

Within this modular architecture, data originating from multiple organizations and systems SHALL first be ingested through the **National Data Exchange Layer (NDEL) or other approved data exchange mechanisms**, after which the ETL layer SHALL perform automated extraction, transformation, validation, and standardization of the incoming data streams. The standardized datasets SHALL then be published into the Open Data Portal’s data catalog and metadata registry. End users SHALL access datasets either through a multilingual web interface for discovery, visualization, and download, or through secure APIs exposed via the API Gateway for programmatic access. The API Gateway SHALL serve as the centralized access control layer, enforcing authentication, authorization, throttling, monitoring, and security policies for all API interactions.

The same API ecosystem SHALL enable downstream integration with the **AI/ML Analytical Model Library**, which SHALL utilize the standardized datasets to develop, store, and publish analytical models, as well as with the **Developer Sandbox Environment**, where researchers, startups, and developers SHALL be able to access datasets and APIs within an isolated and controlled workspace to build applications and analytical tools using standard programming environments. Through this integrated yet modular architecture, the platform SHALL ensure interoperability across all components while maintaining high standards of security, scalability, and operational resilience.

**This is the reference architecture diagram, bidder can suggest alternative architecture fulfilling the desired requirements.**



For NODE to genuinely leverage NDEL rather than simply coexist with it, the architecture implies four distinct integration modes:

**Mode 1 — Push** Agencies with batch datasets push via ETL pipelines into NODE. Appropriate for statistical, periodic, or historical datasets where real-time freshness is not critical. NDEL acts as the secure transport channel for these pushes.

**Mode 2 — Scheduled Pull** NODE's ETL layer reaches out through NDEL to query agency source systems on a defined schedule — hourly, daily — harvesting fresh data automatically without agency intervention. This is how Singapore handles its NEA weather data and SingStat integrations. NDEL provides the authenticated, governed channel for these scheduled queries.

**Mode 3 — Real-Time API Federation** For high-value, time-sensitive datasets where data custody must remain with the source agency, NODE's API Gateway federates live queries through NDEL to the authoritative source system in real time. The consumer calls NODE's API, NODE routes through NDEL to the source, returns a live response. NODE never stores this data — it simply brokers the authenticated, governed exchange. This is where NDEL truly earns its name.

**Mode 4 — Event-Driven Sync** Source systems publish events through NDEL when data changes — a new court judgment, a new procurement award, a new registered business. NODE's ETL layer subscribes to these events and updates the catalog immediately. This eliminates polling latency entirely for datasets where source systems can support event emission.

## 1.9.2 Component-Wise Architecture Description

### 1.9.2.1 Multi-Organizational Data Sources and Data Exchange Layer

The architecture SHALL support integration with multiple government and institutional data providers including ministries, departments, regulatory authorities, and public sector organizations. Data sources may include structured and unstructured systems such as relational databases, data warehouses, enterprise applications, APIs, flat files, spreadsheets, XML/JSON feeds, and other heterogeneous data formats.

Integration with these systems SHALL primarily occur through the **National Data Exchange Layer (NDEL)** or other approved inter-organizational data exchange mechanisms. The data exchange layer SHALL provide secure, standardized, and auditable connectivity between source systems and the Open Data platform, enabling automated data ingestion without requiring direct access to underlying operational systems.

### 1.9.2.2 Data Extraction, Transformation and Loading (ETL) Layer

The **ETL layer** SHALL serve as the primary data ingestion and standardization engine of the platform. As an independent module within the overall architecture, it SHALL be responsible for extracting datasets from connected source systems, transforming the incoming data into standardized formats and schemas, and loading the processed data into the Open Data Portal’s data store.

This layer SHALL support automated data pipelines capable of handling heterogeneous input formats such as JSON, XML, relational databases, Excel files, and other structured or semi-structured data sources. Transformation processes SHALL include schema mapping, data validation, cleansing, normalization, enrichment, and metadata generation to ensure that all datasets conform to the platform’s standardized data model and metadata standards.

The ETL layer SHALL be implemented using **modular microservices-based pipelines** capable of handling large-scale data ingestion while supporting scheduling, orchestration, and monitoring of data workflows. Intermediate caching or staging layers MAY also be used to optimize performance and ensure efficient data processing.

### 1.9.2.3 National Open Data Portal Ecosystem

The **Open Data Portal** SHALL function as the central publishing, discovery, and access platform for all standardized datasets generated through the ETL layer. As a modular component within the ecosystem, it SHALL maintain a comprehensive metadata catalog describing datasets, data sources, update frequencies, ownership, licensing terms, and data schemas.

#### 1.9.2.3.1 User Interface Layer

A multilingual web-based interface enabling public users, researchers, policymakers, and developers to search, discover, visualize, and download datasets. The interface SHALL support dataset previews, data visualizations, dashboards, and intelligent search capabilities.

#### 1.9.2.3.2 Data Access Layer

A programmatic access layer exposing datasets through standardized APIs. This capability SHALL enable automated data consumption by external systems, applications, and analytical tools.

The Open Data Portal SHALL also support the publication and distribution of AI/ML models generated through the AI/ML Analytical Model Library.

### 1.9.2.4 API Gateway and Programmatic Access Layer

The **API Gateway** SHALL serve as the centralized access management layer for all programmatic interactions with the platform. Acting as an independent component within the modular architecture, it SHALL function as the **single controlled entry point for all API-based communication** across the ecosystem.

The gateway SHALL provide capabilities including:

#### 1.9.2.4.1 API authentication and authorization

#### 1.9.2.4.2 API key and token management

#### 1.9.2.4.3 Rate limiting and throttling

#### 1.9.2.4.4 Traffic monitoring and analytics

#### 1.9.2.4.5 Security enforcement against common web and API threats

#### 1.9.2.4.6 Versioning and lifecycle management of APIs

Through the API Gateway, datasets exposed by the Open Data Portal SHALL be made available to external stakeholders including public users, startups, researchers, and third-party developers, as well as to internal analytical systems such as the AI/ML Analytical Model Library and the Developer Sandbox Environment.

#### 1.9.2.5 AI/ML Model Repository

The **AI/ML Analytical Model Library** SHALL act as a centralized repository for storing, managing, and distributing analytical models developed using the platform’s datasets. This component SHALL operate as a modular analytical service layer connected to the broader data ecosystem through APIs.

The library SHALL support storage of model artifacts, metadata describing training datasets and algorithms, model versioning, performance metrics, and governance information.

The repository SHALL allow approved users to publish analytical models which can then be accessed, downloaded, or invoked via APIs. These models may include predictive analytics models, machine learning classifiers, natural language processing models, or other analytical tools developed using the platform’s data.

The AI/ML repository SHALL integrate with both the API Gateway and the Developer Sandbox Environment, allowing models to be tested, improved, and reused by developers, researchers, and government analysts.

Critically, NODE's AI/ML Repository is not a model training or inference platform. It is a **governed library of fine-tuned, pre-validated models** — purpose-built for the data landscape Pakistan actually has, not the one it wishes it had. The repository's value is in making these models discoverable, reusable, and governable across agencies and researchers without each consumer rebuilding from scratch.

Realistic and high-value use cases for this repository given Pakistan's actual data availability include:

**Forecasting models on aggregated time-series** — a fine-tuned model predicting provincial wheat production based on 10 years of PBS agricultural data combined with PMD weather data. Neither dataset is granular at individual farm level, yet the combination produces actionable forecasts for food security planning.

**Anomaly detection on financial aggregates** — a model trained on SBP's published banking sector data identifying unusual patterns in sector-level credit flows, useful for macroprudential oversight without requiring transaction-level data.

**Natural language processing on public documents** — regulatory gazettes, court judgments, procurement notices, and policy documents are all text-rich, publicly available, and entirely within NODE's mandate. NLP models for entity extraction, topic classification, and sentiment analysis on these corpora are immediately feasible and high value.

**Geospatial classification models** — combining Survey of Pakistan boundary data, Punjab or Sindh land use records, and SUPARCO satellite imagery — all publishable without sensitivity concerns — to produce land cover classification or urban growth prediction models.

**Index construction models** — combining aggregated data across multiple themes to construct composite indicators such as a district-level development index or a business environment score, directly useful for evidence-based policymaking.

The expectation from the AI/ML Repository is therefore not that it trains models on sensitive microdata — it does not. It is that it provides government agencies, researchers, and startups a governed, citable, version-controlled library of validated analytical models built on what NODE actually publishes, eliminating duplicated effort and establishing a national baseline for data-driven public sector analytics.

#### **1.9.2.6 Developer Sandbox Environment**

The **Developer Sandbox Environment** SHALL provide a secure and isolated development workspace enabling developers, researchers, startups, and academic users to experiment with datasets and build data-driven applications.

As a separate module within the platform architecture, the sandbox SHALL provide pre-configured development environments supporting commonly used programming languages and frameworks such as **Python, R, Java, and other data science toolkits**.

Users SHALL be able to access standardized datasets and APIs within the sandbox environment using controlled authentication mechanisms such as Single Sign-On (SSO) and API keys.

The sandbox SHALL support capabilities including:

##### **1.9.2.6.1 interactive development workspaces**

##### **1.9.2.6.2 API exploration tools**

##### **1.9.2.6.3 dataset access for testing and experimentation**

##### **1.9.2.6.4 integration with the AI/ML Model Library**

This environment SHALL foster innovation while ensuring that access to datasets remains controlled and auditable.

#### **1.9.3 Overall Architectural Principles**

The entire platform SHALL be implemented using modern architectural principles including:

##### **1.9.3.1 Modular microservices-based architecture**

For the purposes of implementation, acceptance, and risk management, the Open Data Portal Ecosystem shall be decomposed into the following **logical modules**, each of which shall be capable of being designed, developed, tested, and accepted independently:

1. Data Extraction, Transformation, and Standardisation Layer (ETL Module)
2. Open Data Portal Module
3. API Gateway and Programmatic Access Module
4. Developer Sandbox Module
5. AI/ML Analytical Model Repository Module

The above modular decomposition is **logical and functional** and does not prescribe a specific technology stack or deployment model.

### 1.9.3.2 API-first design

### 1.9.3.3 Cloud-native deployment

### 1.9.3.4 Secure data exchange mechanisms

### 1.9.3.5 Centralized identity and access management

### 1.9.3.6 Horizontally scalable and fault-tolerant infrastructure

These principles SHALL ensure that the National Open Data Portal Ecosystem operates as a **secure, interoperable, scalable, and future-ready digital platform capable of supporting data-driven governance, innovation, and research while allowing independent evolution of each architectural component.**

## 1.9.4 Federated Data Lifecycle Management Architecture

The proposed system architecture shall support a **federated data lifecycle management model**, ensuring that ownership, control, and operational management of datasets remain with the respective data-providing organizations, while enabling centralized discovery, interoperability, and governance through the National Open Data Portal.

The architecture shall therefore enable **distributed data publishing with centralized discovery and standards enforcement**, allowing ministries, departments, agencies (MDAs), and provincial entities to manage the lifecycle of their datasets while maintaining national interoperability and quality standards.

This federated model aligns with internationally adopted open data architectures where a **single national discovery platform aggregates datasets from distributed publishers across government entities.**

### 1.9.4.1 Distributed Data Ownership and Lifecycle Control

The system architecture shall ensure that participating organizations retain **full operational control over the lifecycle of datasets under their authority**, including:

- dataset creation and publishing
- metadata management
- dataset updates and versioning
- dataset archival and retirement
- data access policy management.

Each participating organization shall be able to manage its datasets through secure organizational accounts within the platform.

### 1.9.4.2 Federated Publishing Model

The system shall support a **federated publishing architecture**, whereby datasets may be published through one or more of the following mechanisms:

- direct publishing through the National Open Data Portal interface
- automated ingestion through the Data Extraction and Transformation Layer
- API-based integration with agency systems
- metadata harvesting from external or agency-level open data portals where applicable.

This approach shall allow organizations with different levels of technical maturity to participate in the national open data ecosystem.

### 1.9.4.3 Centralized Data Discovery and Access Layer

While publishing and lifecycle control remain distributed, the **National Open Data Portal shall function as the single national discovery and access layer** for all datasets published through the ecosystem.

The portal shall therefore provide:

- a unified dataset catalog aggregating datasets from all participating organizations
- centralized dataset search, discovery, and navigation capabilities
- standardized metadata indexing
- unified APIs for programmatic dataset access
- analytics and usage insights across the national data ecosystem.

This architecture shall ensure that users interact with **one authoritative national access point** while data remains managed by the respective source organizations.

### 1.9.4.4 Centralized Data Quality and Metadata Governance

The platform shall incorporate a **central data curation and quality assurance function** responsible for ensuring consistency and compliance with national standards.

- The central data curation team shall be responsible for:
- validation of dataset metadata against national metadata standards
- verification of dataset structure and format compliance
- enforcement of controlled vocabularies and taxonomies
- quality checks and completeness verification.

However, the central team **shall not assume operational control of datasets owned by participating organizations**, except for quality validation and compliance enforcement.

### 1.9.4.5 National Metadata and Data Standards Enforcement

The architecture shall enforce the use of standardized metadata schemas and dataset standards to ensure interoperability across the national ecosystem.

The system shall therefore support:

- nationally defined metadata standards
- standardized dataset classification and tagging taxonomies
- dataset provenance and update frequency tracking
- machine-readable metadata formats for interoperability.

All datasets published through the system shall comply with these standards to ensure consistent discoverability and reuse.

### 1.9.4.6 Automated Federation and Interoperability

The architecture shall support automated federation across distributed data sources through standardized interoperability mechanisms including:

- API-based metadata harvesting
- automated synchronization of dataset updates
- scheduled metadata harvesting processes
- compatibility with the National Data Exchange Layer (NDEL).

Manual or ad-hoc data exchange mechanisms shall not be considered compliant with the federated architecture model.

#### 1.9.4.7 Organizational Autonomy with National Compliance

The system architecture shall preserve the operational autonomy of participating organizations while ensuring compliance with national governance standards.

- Accordingly:
- data ownership shall remain with the respective data-providing organization
- organizations shall control dataset publication and lifecycle management
- the national platform shall enforce standards, metadata compliance, and interoperability requirements
- non-compliant datasets may be flagged or withheld from national publication until compliance requirements are met.

#### 1.9.4.8 Scalability of the Federated Data Ecosystem

The federated architecture shall support the gradual onboarding of new participating entities across federal, provincial, and local government levels.

The system design shall therefore allow:

- addition of new data-providing organizations without architectural changes
- scaling of dataset ingestion pipelines
- expansion of metadata catalogs and API access services
- integration with future sectoral or regional data platforms.

### 1.9.5 Phased Implementation Approach

The system **shall be implemented in phased increments**, with each phase delivering **standalone, usable value** to the Purchaser.

#### 1.9.5.1 Development & Implementation Phases

##### Phase 1 – Core Data Publication Platform

Phase 1 shall constitute the **minimum viable operational platform** and shall, at a minimum, include:

- ETL Module (initial scope for selected priority entities);
- Open Data Portal Module (e.g. core cataloguing, metadata, search, and download features etc.);
- Basic API Gateway functionality for read-only programmatic access; and
- Role-based access control and user management.

Phase 1 shall be designed such that it can operate independently, without reliance on the Developer Sandbox or AI/ML Repository modules.

##### Phase 2 – Developer Enablement and Expanded Access

Subject to Purchaser approval, Phase 2 may include:

- Expanded API Gateway capabilities (e.g., rate limiting, usage tiers);
- Developer Sandbox Module; and
- Additional automation and tooling for advanced users.

##### Phase 3 – Advanced Analytics and Model Publication

Subject to Purchaser approval, Phase 3 includes:

- AI/ML Analytical Model Repository Module; and
- Integration of analytical outputs with the Open Data Portal, Sandbox and APIs.

Vendors may propose alternative or refined phasing structures, provided that **Phase 1 remains a self-contained, operationally valuable baseline**.

### 1.9.5.2 Design and Deliverable Alignment

Although **Deliverable 2 (Unified & Component-Level System Design Document)** and **Deliverable 3 (Integrated Staging Environment & UAT Sign-Off)** are defined as consolidated deliverables, their **preparation, submission, and acceptance shall be conducted in phased, module-aligned increments**, consistent with this Modular and Phased Implementation Strategy.

Specifically:

- Design artifacts within D2 shall clearly distinguish Phase 1, Phase 2, and Phase 3 scopes and dependencies.
- Components not included in Phase 1 shall not be treated as prerequisites for Phase 1 acceptance; and
- Integration depth shall increase progressively across phases rather than being mandated upfront.

### 1.9.5.3 Acceptance, Validation, and Exit Provisions

Each implementation phase **shall be subject to independent validation and acceptance**.

Successful acceptance of Phase 1 shall be a **precondition for proceeding to subsequent phases**.

Failure to achieve acceptance for Phase 1 shall entitle the Purchaser to **terminate the contract without obligation to proceed further**, without prejudice to any other contractual remedies.

This phased acceptance framework is intended to:

- Prevent single-point-of-failure outcomes;
- Delivery of operational value; and
- Ensure that risks are identified and addressed early in the project lifecycle.

### 1.9.5.4 Vendor Flexibility and Responsibility

Vendors shall be responsible for proposing a **detailed, phase-wise implementation plan**, including sequencing, dependencies, staffing, and risk mitigation measures, consistent with the principles set out in this subsection.

The Purchaser reserves the right to review, refine, and approve the proposed phasing to ensure alignment with institutional readiness, policy priorities, and budgetary considerations.

## 1.9.6 Security Architecture

The overall platform SHALL adopt a comprehensive and layered security architecture designed in accordance with internationally recognized Cybersecurity frameworks and secure system engineering practices. The security architecture SHALL follow the principle of **defence-in-depth**, ensuring that multiple, independent security controls are implemented across infrastructure, network, application, data, and user access layers. The architecture SHALL ensure that the confidentiality, integrity, availability, and lawful use of data are maintained across all components of the National Open Data Portal Ecosystem, including the ETL layer, Open Data Portal, API Gateway, AI/ML Analytical Model Library, Sandbox Environment, and all associated integrations.

### 1.9.6.1 Defence-in-Depth Security Strategy

The platform SHALL implement a **defence-in-depth security strategy incorporating network security, Web Application Firewalls (WAF), and robust Identity and Access Management (IAM)**.

This strategy SHALL include layered security controls across the following architectural tiers:

#### 1.9.4.1.1 Network Security Layer

The underlying infrastructure SHALL implement multiple network protection mechanisms including:

- Segmented network architecture separating public, application, data, and administrative zones.
- Firewalls and network access control policies governing inbound and outbound traffic.
- Distributed Denial of Service (DDoS) protection mechanisms for public-facing services.
- Network monitoring and intrusion detection/prevention systems (IDS/IPS).
- Secure connectivity mechanisms for integration with external systems such as the National Data Exchange Layer (NDEL).

#### 1.9.6.1.2 Application Security Layer

All application components including the Open Data Portal, API Gateway, and Sandbox services SHALL implement application-layer protections including:

- Deployment of **Web Application Firewalls (WAF)** to protect against common web-based attacks.
- Protection against OWASP Top 10 vulnerabilities including injection attacks, cross-site scripting, broken authentication, and insecure deserialization.
- Input validation, request filtering, and secure API schema validation mechanisms.
- Runtime application security monitoring and anomaly detection.

#### 1.9.6.1.3 Infrastructure and Platform Security

The infrastructure hosting the platform SHALL implement secure configuration and hardening practices including:

- Secure operating system configurations aligned with recognized security baselines.
- Continuous vulnerability scanning and patch management.
- Secure container and microservices runtime environments where applicable.
- Isolation between development, testing, staging, and production environments.

#### 1.9.6.2 Identity and Access Management

The platform SHALL implement **robust Identity and Access Management (IAM)** mechanisms ensuring that all users, systems, and services accessing the platform are authenticated, authorized, and monitored.

##### 1.9.6.2.1 Multi-Factor Authentication and Single Sign-On

The solution SHALL enforce **Mandatory Multi-Factor Authentication (MFA) and Single Sign On (SSO) for all administrative, privileged, and publisher-level access across all components.**

The identity management system SHALL support:

- Integration with national or organizational identity systems where required.
- Federated identity management standards such as OAuth2, OpenID Connect, or SAML.
- Secure token-based authentication mechanisms for API and service-to-service interactions.
- Centralized identity management for administrators, data publishers, developers, and end users.

#### **1.9.6.2.2 Role-Based and Policy-Based Access Control**

The system SHALL implement fine-grained access control mechanisms including:

- Role-Based Access Control (RBAC) for administrative and operational roles.
- Policy-Based Access Control (PBAC) where applicable.
- Principle of least privilege for all system users and service accounts.
- Segregation of duties for administrative functions across system components.

#### **1.9.6.3 Data Encryption and Protection**

The platform SHALL implement **end-to-end encryption for data in transit and at rest.**

##### **1.9.6.3.1 Data in Transit**

All communication between system components, external users, APIs, and integrated systems SHALL be protected using secure transport protocols including:

- TLS-based encrypted communication for web interfaces and APIs.
- Secure service-to-service communication within the microservices architecture.
- Encrypted connections for all external data integrations.

##### **1.9.6.3.2 Data at Rest**

Sensitive datasets, metadata repositories, and system configuration data SHALL be protected using strong encryption mechanisms including:

- Industry-recognized encryption algorithms for storage encryption.
- Encrypted storage volumes or database encryption where applicable.
- Secure key management using centralized Key Management Systems (KMS) or Hardware Security Modules (HSM).

#### **1.9.6.4 Security Monitoring and Auditability**

The security architecture SHALL include mechanisms for continuous monitoring, audit logging, and incident detection across the entire platform.

The platform SHALL provide:

- Centralized logging of security-related events.
- Tamper-resistant audit trails capturing administrative and system actions.
- Security monitoring dashboards and alerting mechanisms.
- Integration capability with centralized Security Information and Event Management (SIEM) systems where applicable.

#### **1.9.6.5 Secure API and Integration Security**

All APIs exposed by the platform SHALL be protected through the centralized API Gateway and SHALL enforce security mechanisms including:

- Secure authentication and authorization of API consumers.
- API throttling, rate limiting, and quota enforcement.
- API request validation and schema enforcement.
- Logging and monitoring of API access and usage patterns.

#### **1.9.6.6 Secure Access to Developer Sandbox and Analytical Services**

Access to the Developer Sandbox Environment and AI/ML Analytical Model Library SHALL be governed by secure authentication and authorization mechanisms aligned with the IAM framework of the platform.

The sandbox environment SHALL ensure:

- Isolation of user workspaces to prevent unauthorized data access.

- Controlled access to datasets and APIs through authenticated credentials.
- Monitoring of user activity within the sandbox environment.

#### **1.9.6.7 Security Compliance and Standards Alignment**

The security architecture SHALL align with internationally recognized Cybersecurity standards and frameworks, including but not limited to:

- ISO/IEC 27001 Information Security Management Systems
- NIST Cybersecurity Framework
- OWASP security best practices for web and API security
- Applicable national Cybersecurity standards and policies

Compliance with these frameworks SHALL ensure that the platform maintains a robust and auditable Cybersecurity posture throughout its lifecycle.

#### **1.9.7 Data Freshness through Technical Enforcement**

NODE must be designed in layered combination of technical enforcement, automated monitoring, and governance accountability mechanisms operating across four distinct levels.

##### **Level 1 — Mandatory Metadata Commitment at Publication**

No dataset can be published on NODE without the publishing agency declaring a mandatory refresh frequency as part of its compliant metadata record. This is not optional guidance it is a system-enforced required field. Acceptable values are real-time, daily, weekly, monthly, quarterly, or annually. Once declared, this commitment becomes the contractual baseline against which the dataset's freshness is continuously measured. An agency that publishes a dataset as "monthly" has formally committed to monthly updates and the system enforces this.

##### **Level 2 — Automated Freshness Monitoring and Escalation**

NODE's analytics and monitoring layer continuously tracks the last-updated timestamp of every published dataset against its declared refresh frequency. When a dataset has not been updated within its committed cycle, the system initiates an automated escalation sequence:

- **At 80% of the declared refresh window:** Automated reminder notification sent to the dataset owner and organization administrator within the publishing agency.
- **At 100% — threshold breach:** Dataset is automatically flagged as stale on the public portal with a visible freshness indicator, and a formal breach notification is sent to the agency's designated data focal point and copied to the platform administrator.
- **At 150% of the declared refresh window:** Dataset visibility is suppressed from default search results and prominently marked as potentially outdated, with a timestamp of last verified update displayed to all consumers.
- **At 200%:** The dataset is escalated to the NODE governance dashboard for PIU review and potential administrative action against the publishing agency.

This automated escalation means no human monitoring is required to identify non-compliant agencies the system surfaces them automatically and creates an auditable record of non-compliance.

##### **Level 3 — Publisher Scorecards and Public Accountability**

NODE's administrative dashboard generates a Publisher Scorecard for every registered organization, publicly visible to portal users, displaying each agency's metadata completeness rate, declared versus actual update frequency compliance, and dataset quality index. This public visibility creates reputational accountability — an agency with a poor scorecard is visible not

just to PIU but to citizens, researchers, journalists, and other government entities consuming their data.

This mechanism draws directly from Singapore's experience with data.gov.sg, where public freshness indicators on dataset pages created sufficient reputational pressure on agencies to maintain their publication commitments without requiring heavy-handed administrative enforcement.

#### **Level 4 — NDEL Integration as a Structural Solution**

The most durable answer to agency abandonment is to reduce the dependency on agency action entirely. Where MODE 2 scheduled pull and MODE 4 event-driven sync are implemented through NDEL, the platform does not wait for agencies to push updates — it retrieves or receives them automatically. An agency that goes quiet after initial onboarding has no impact on data freshness if NODE is pulling directly from the authoritative source system on a defined schedule. This architectural approach removes human compliance as a dependency for the platform's most critical datasets.

#### **Level 5 — Contractual and Regulatory Underpinning**

The Digital Nation Pakistan Act 2025 provides the legislative basis for mandating data publication by government entities. NODE's governance framework should operationalize this through formal Data Sharing Agreements executed with each onboarded agency prior to their first publication. These agreements must specify the dataset inventory the agency commits to publish, the declared refresh frequency for each dataset, the designated data focal point responsible for maintaining publication compliance, and the consequences of sustained non-compliance including escalation to the agency's ministry secretary and ultimately to MoITT as the platform owner.

The combination of technical automation at Levels 1 through 3, architectural elimination of the dependency at Level 4, and regulatory enforcement at Level 5 creates a comprehensive governance framework that does not rely on any single mechanism and cannot be circumvented by agency inaction alone.

### **1.10 Systems Administration and Management**

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#### **1.10.1 Unified Administrative Control:**

- A centralized, web-based administrative backend for governing the entire platform and data lifecycle.
- Granular, multi-tiered **Role-Based Access Control (RBAC)** with defined hierarchical roles (System Administrator, Organization Administrator, Editor, Member) and support for custom roles.
- Must have MFA and Single Sign On (SSO) functionality for all components.

#### **1.10.2 Component-Specific Management:**

##### **1.10.2.1 National Open Data Portal:**

Management of configurable publishing workflows, user/organization hierarchy, harvest sources, thematic collections, and comprehensive analytics. Detailed requirements are explained in later sections.

##### **1.10.2.2 Developer Sandbox:**

Administration of workspace stacks, resource quotas (CPU, memory, storage per user), and platform health monitoring. Detailed requirements are explained in later sections.

### 1.10.2.3 Data Transformation Layer:

Monitoring of ETL/ELT pipeline health, error handling, logging, and alerting. Detailed requirements are explained in later sections.

### 1.10.2.4 API Gateway:

Configuration of security policies, rate limits, and access to real-time analytics dashboards. Detailed requirements are explained in later sections.

### 1.10.2.5 AI/ML Analytical Model Library:

All administrative features related to a state of the art Ai/ML Analytical Model Library should have. Detailed requirements are explained in later sections.

## 1.10.3 System-Wide Monitoring & Analytics:

- A comprehensive administrative dashboard displaying KPIs: total dataset count, new publications, top downloads, API usage statistics, and user registration trends.
- Detailed, immutable audit trails capturing all significant user actions (dataset modification, user login, permission changes).
- Custom reporting capabilities for platform activity and data publication performance.
- Detailed requirements are explained in later sections.

## 1.11 Infrastructure Sizing and Performance Requirements

### 1.11.1 Component-Wise Workload & Sizing Parameters (3-Year Horizon)

To enable a comparable and logical resource sizing declaration, all Bidders **SHALL** use the following baseline requirements as the minimum workload for their infrastructure design.

Bidders **SHALL** declare infrastructure resources sized for **Year 3 (Target) workload** parameters, representing the full 3-year design horizon. Year 1 and Year 2 parameters are provided for context and phased deployment planning.

**The infrastructure must be sized taking into account the projected yearly growth described in the table below while maintaining all defined performance SLAs.**

| Component / Metric                              | Year 1 (Baseline)                                                                                                                                    | Year 2                                                                                                                                               | Year 3 (Target)                                                                                                                                      |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Total Catalog Datasets</b>                   | 500 – 800                                                                                                                                            | 1500 – 2000                                                                                                                                          | 3000 – 4000                                                                                                                                          |
| <b>Total Daily API Transactions</b>             | 20,000 – 50,000                                                                                                                                      | 100,000 – 300,000                                                                                                                                    | 500,000 – 1,000,000                                                                                                                                  |
| <b>Concurrent Web Users (Normal Operations)</b> | 100 – 200 for <b>Normal Operations</b><br>(System SHALL support burst capacity up to 3× the normal concurrent load during peak or emergency demand.) | 250 – 400 for <b>Normal Operations</b><br>(System SHALL support burst capacity up to 3× the normal concurrent load during peak or emergency demand.) | 500 – 750 for <b>Normal Operations</b><br>(System SHALL support burst capacity up to 3× the normal concurrent load during peak or emergency demand.) |
| <b>API Gateway Throughput</b>                   | 20 – 30 req/sec                                                                                                                                      | 60 – 100 req/sec                                                                                                                                     | 150 – 250 req/sec                                                                                                                                    |

|                                      |                                                     |                                                     |                                                      |
|--------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|
| <b>Daily ETL/ELT Pipelines</b>       | 20 – 30 pipelines (10 – 15 data sources / Agencies) | 40 – 60 pipelines (20 - 30 data sources / Agencies) | 80 – 120 pipelines (40 - 60 data sources / Agencies) |
| <b>Sandbox Concurrent Workspaces</b> | 50 - 100                                            | 150 - 300                                           | 400 - 500                                            |

### 1.11.2 Storage Sizing Benchmarks

Bidders shall calculate storage requirements (Object Storage and Database) based on the following average dataset size distribution:

- **Structured Data (80% of catalogue):** Avg. 25 MB per dataset (CSV, JSON, Parquet).
- **Spatial / Geospatial Data (15% of catalogue):** Avg. 250 MB per dataset (GeoJSON, SHP, TIFF).
- **Unstructured/Legacy Data (5% of catalogue):** Avg. 15 MB per dataset (PDF, Documentation).
- **AI/ML Artifacts:** Avg. 500 MB per versioned model. Bidders shall assume a minimum of 200 versioned AI/ML model artifacts for Year 3 storage sizing purposes.
- **Developer Sandbox:** 5–10 GB persistent block storage per active workspace, with access to shared object storage pools for larger dataset operations.
- **The Test/Staging environment** SHALL be sized at a minimum of 50% of the Production environment resource allocation.

### 1.11.3 Availability, Reliability, and Disaster Recovery

- **System Availability:** The production environment SHALL achieve a minimum availability of **99.9%** measured monthly, excluding approved maintenance windows.
- **Redundancy:** All critical components (API Gateway, Portal, Identity Services) SHALL operate in redundant **active-active or active-passive** configurations across at least two independent availability zones.
- **Failover:** Automated failover mechanisms SHALL ensure service disruption is limited to **< 5 minutes**.
- **Disaster Recovery (DR): Recovery Time Objective (RTO):**  $\leq 4$  hours.
- **Recovery Point Objective (RPO):**  $\leq 15$  minutes.
- **Backups:** Daily incremental and weekly full system backups with secure off-site storage.

### 1.11.4 Response Time & Throughput Standards

Under normal operating conditions, the system SHALL maintain the following average response times:

- **Standard Web Interaction:**  $< 2$  seconds (Search, Metadata retrieval, Catalog browsing, Dataset Preview).
- **API Metadata Queries:**  $\leq 500$  milliseconds.
- **API Dataset Queries:**  $\leq 1$  second.
- **Download Initiation:** Begin within 3 seconds for files up to 500 MB.
- **Visualization Rendering:** Initial results for charts/maps rendered within 3 seconds.

### 1.11.5 Security Performance & Vulnerability Remediation

The system SHALL support continuous vulnerability scanning and automated security monitoring across infrastructure, APIs, and all application layers. Remediation of identified vulnerabilities SHALL follow these strict timelines:

- **Critical (CVSS  $\geq 9.0$ ):** Within 72 hours.
- **High (CVSS 7.0–8.9):** Within 7 business days.
- **Medium (CVSS 4.0–6.9):** Within 30 days.
- **Security Alerts:** Anomalous activity detection and alerting within 1 minute of occurrence.
- Security controls such as **Multi-Factor Authentication (MFA)** and **Single Sign-On (SSO)** SHALL not introduce authentication latency exceeding **1 second under normal operating conditions**.
- **Logs:** Security logs SHALL be retained for a **minimum of 12 months or as per Data Governance Policy** to support audit, compliance, and forensic investigation requirements.

#### 1.11.6 Resource Scaling Evaluation

As per the Resource Sizing Declaration, Bidders shall itemize resources (vCPU, RAM, Structured Storage, and Object Storage) across Production, DR, and Test/Staging environments.

**Evaluation Method:** Bidders requiring the lowest total infrastructure resources to meet these defined parameters, while demonstrating a valid architectural approach, will receive the maximum efficiency score (20%).

### 1.12 Cybersecurity

The bidder shall design, implement, and operate the proposed National Open Data Portal Ecosystem in accordance with robust Cybersecurity principles **shall align with or exceed the requirements defined in section 1.7.3** to ensure the **confidentiality, integrity, availability, and lawful use of data** across the entire platform, including the ETL layer, Open Data Portal, API Gateway, AI/ML Repository, Sandbox Environment, and all associated integrations.

#### 1.12.1 Compliance with National and International Standards

The solution **SHALL** comply with applicable national Cybersecurity laws, regulations, and policies **shall align with or exceed the requirements defined in section 1.7.3**, as well as internationally recognized information security standards.

- ISO/IEC 27001 (Information Security Management Systems)
- ISO/IEC 27017 / 27018 (Cloud security and protection of personal data, where applicable)
- NIST Cybersecurity Framework (CSF)
- OWASP security best practices for web and API security
- Pakistan Security Standards (PSS)

Any certifications held by the bidder, OEMs, or proposed platforms shall be clearly stated.

#### 1.12.2 Secure Architecture & Design

The proposed architecture **SHALL**:

- Enforce security-by-design and security-by-default principles
- Clearly segregate environments (production, staging, testing, sandbox)
- Ensure that no sensitive data is exposed unintentionally through the Open Data Portal
- Prevent any form of unauthorized lateral movement across system components

All trust, governance, and control layers shall remain **logically and operationally separated** from runtime data flows.

### **1.12.3 Identity, Authentication & Access Control**

The solution **SHALL** support:

- Strong authentication mechanisms for system administrators, data publishers, and API consumers
- Role-based and policy-based access control aligned with least-privilege principles
- Secure authentication and authorization for APIs, including support for token-based mechanisms and mutual authentication where applicable
- Integration with national or organizational identity systems where required

### **1.12.4 API and Application Security**

The API Gateway and application layers **SHALL**:

- Protect against common application and API threats (e.g., DDOs, injection attacks, broken authentication, excessive data exposure)
- Support configurable rate limiting, throttling, and quota enforcement
- Validate requests and responses against defined schemas
- Enforce secure communication channels (e.g., TLS) for all external and internal interfaces

### **1.12.5 Data Protection & Privacy Controls**

The solution **SHALL**:

- Support data classification and handling rules as defined by the data-owning agencies
- Prevent unauthorized access to restricted or sensitive datasets
- Support masking, anonymization, or aggregation of data where required
- Ensure that metadata publication does not expose protected information

### **1.12.6 Data Encryption**

All sensitive data **SHALL** be encrypted using industry-standard cryptographic algorithms for data at rest and in transit. Encryption keys shall be managed through a secure Key Management System (KMS) or Hardware Security Module (HSM).

### **1.12.7 Logging, Monitoring & Incident Detection**

The platform **SHALL** provide:

- Comprehensive security logging for administrative actions, API access, and system events
- Tamper-resistant audit trails suitable for compliance and forensic analysis
- Continuous monitoring and alerting for abnormal or suspicious activity
- Defined procedures for security incident detection, reporting, and response

Logs shall be retained in accordance with applicable legal and regulatory requirements.

### **1.12.8 Vulnerability Management & Secure Operations**

The bidder **SHALL**:

- Implement regular vulnerability scanning and remediation processes
- Apply timely security patches and updates to all platform components
- Follow secure configuration and hardening guidelines for infrastructure and applications
- Provide documented procedures for secure operations and maintenance
- Infrastructure and application components **SHALL** follow secure configuration baselines and hardening standards consistent with the frameworks referenced in Section 1.7.3

### **1.12.9 Business Continuity & Resilience**

The solution **SHALL**:

- Be designed for high availability and resilience against cyber incidents
- Support backup, recovery, and disaster recovery mechanisms
- Ensure that Cybersecurity incidents do not compromise the integrity of published open data

#### **1.12.10 Third-Party and Supply Chain Security**

Where third-party software, platforms, or services are used, the bidder **SHALL**:

- Ensure that such components meet equivalent security standards as described in **1.7.3 Information Security Standards**.
- Clearly identify dependencies and shared responsibility boundaries
- Remain fully accountable for security compliance of the overall solution

#### **1.12.11 Cybersecurity Accreditation & Assurance**

The bidder **SHALL** provide evidence of relevant Cybersecurity accreditations, certifications, or independent security assessments applicable to the proposed solution. Where formal certifications are not available, the bidder shall provide a documented Cybersecurity assurance approach demonstrating how equivalent levels of protection to **1.7.3 Information Security Standards** will be achieved.

#### **1.12.12 Additional Cybersecurity Requirements**

To ensure comprehensive Cybersecurity coverage for the National Open Data Portal Ecosystem (NIDE), the solution **SHALL** also address the following additional security aspects, in alignment with and complementary to the **Information Security Standards** defined in **Section 1.7.3**.

##### **1.12.12.1 Encryption and Cryptographic Controls**

- Sensitive data **SHALL** be protected through **encryption at rest and in transit** using industry-recognized cryptographic algorithms consistent with the security standards referenced in **Section 1.7.3**.
- Secure **cryptographic key management** mechanisms **SHALL** be implemented, including the use of centralized Key Management Systems (KMS) or Hardware Security Modules (HSM) where applicable.
- All digital certificates and encryption keys **SHALL** be managed through a secure **certificate and key lifecycle management process**.

##### **1.12.12.2 Secure Software Development and DevSecOps**

- The bidder **SHALL** adopt a **Secure Software Development Lifecycle (SSDLC)** aligned with the secure development practices implied by the standards referenced in **Section 1.7.3**.
- Security controls **SHALL** be integrated into the development pipeline, including **static and dynamic application security testing (SAST/DAST)**.
- The solution **SHALL** implement **continuous dependency and software supply chain vulnerability scanning**.
- Security validation **SHALL** be integrated into **CI/CD pipelines (DevSecOps)** to prevent deployment of insecure code or components.

##### **1.12.12.3 Security Testing and Assurance**

- The platform **SHALL** undergo **periodic independent penetration testing**, including testing of APIs, infrastructure components, and applications.

- Security testing SHALL be conducted **prior to production deployment and after major system updates.**
- Regular **API security assessments and configuration reviews** SHALL be performed to ensure compliance with OWASP and other standards referenced in **Section 1.7.3.**

#### 1.12.12.4 Security Monitoring and Security Operations

- The platform SHALL support integration with centralized **Security Information and Event Management (SIEM)** or equivalent monitoring systems.
- Continuous monitoring SHALL be implemented across infrastructure, APIs, applications, and data pipelines in accordance with the monitoring and detection principles implied by **Section 1.7.3.**
- Where required, the system SHALL support **24/7 security monitoring and coordinated incident response capabilities.**

#### 1.12.12.5 Network and Infrastructure Protection

- Public-facing components SHALL be protected through **Web Application Firewall (WAF)** or equivalent security controls.
- The architecture SHALL incorporate **Distributed Denial of Service (DDoS) protection mechanisms.**
- Network segmentation and isolation controls SHALL be implemented to prevent unauthorized access between system components, consistent with the **defence-in-depth principles referenced in Section 1.7.3.**

#### 1.12.12.6 Data Sovereignty and Data Residency

- The solution SHALL comply with applicable **national data residency, sovereignty, and government data protection requirements.**
- Controls SHALL ensure that restricted or protected datasets are **stored and processed only in authorized environments.**

#### 1.12.12.7 Artificial Intelligence and Model Security

- The platform SHALL ensure **integrity, authenticity, and traceability of AI/ML models** stored in the AI/ML repository.
- Controls SHALL be implemented to prevent **unauthorized modification, model tampering, or dataset poisoning.**
- Access to training datasets, model artifacts, and model deployment mechanisms SHALL be governed by secure access control policies aligned with **Section 1.7.3 standards.**

#### 1.12.12.8 Privacy and Personal Data Protection

- The system SHALL implement **privacy-by-design and privacy-by-default principles** across all components.
- Where datasets contain personal or sensitive information, **privacy impact assessments** SHALL be conducted.
- Mechanisms SHALL be implemented to enforce **data minimization, anonymization, and controlled data exposure**, consistent with the privacy and protection principles referenced in **Section 1.7.3.**

#### 1.12.12.9 Container and Cloud Infrastructure Security

- Security controls SHALL be implemented for **containerized workloads**, including container image scanning and runtime protection.
- Cloud infrastructure SHALL be configured and hardened in accordance with the security standards referenced in **Section 1.7.3.**

- Secure mechanisms SHALL be implemented for managing **secrets, credentials, and configuration parameters**.

#### **1.12.12.10 Security Governance and Certification**

- The bidder SHALL maintain alignment with the **information security frameworks referenced in Section 1.7.3** throughout the system lifecycle.
- Periodic **independent security audits and compliance assessments** SHALL be conducted to verify ongoing adherence to these standards.

#### **1.12.13 Contractual Obligations**

Cybersecurity requirements defined herein shall form part of the contractual obligations of the successful bidder. Non-compliance, security breaches, or failure to adhere to agreed security controls may result in contractual remedies as defined in the RFP.

## C. SERVICE SPECIFICATIONS – SUPPLY & INSTALL ITEMS

### 2.1 System Analysis and Detailed Solution Design

Following contract signing, the Supplier shall undertake a structured **system analysis and detailed solution design phase** to validate the requirements specified in this RFP and prepare the technical, architectural, and implementation planning documentation required for successful deployment of the National Open Data Portal Ecosystem.

The objective of this phase is to confirm the Supplier’s understanding of the project scope, validate functional and technical requirements, establish the implementation baseline, and prepare the detailed documentation necessary to proceed to the system design phase.

The Supplier shall apply a recognized **system engineering and software development methodology based on Agile principles**, ensuring iterative development cycles, continuous integration, structured testing, and incremental delivery of system capabilities.

All documents, plans, and analyses described under this section shall collectively constitute **Deliverable 1 – Project Foundation Pack**.

#### 2.1.1 Inception Report

Within four (4) weeks of contract signature, the Supplier shall submit an **Inception Report** establishing the implementation baseline for the project.

The Inception Report shall confirm the Supplier’s understanding of the project objectives, validate the proposed implementation strategy, and define the approach that will be used to design, implement, test, and deploy the National Open Data Portal Ecosystem.

The report shall include, at minimum, the following elements:

##### A. Project Understanding and Scope Confirmation

The Supplier shall confirm:

- overall system architecture approach for the National Open Data Portal Ecosystem
- alignment with the functional, technical, and architectural requirements defined in this RFP
- key assumptions, dependencies, and implementation constraints
- identification of major technical and operational risks affecting system delivery.

##### B. Agile Implementation Methodology

The Supplier shall describe the Agile-based system development methodology to be applied throughout the project lifecycle.

The methodology description shall include:

- sprint planning and backlog management approach
- iterative design and development cycles
- continuous integration and automated testing practices
- release management and version control procedures
- approach for integrating testing, security validation, and deployment within the development lifecycle.

##### C. Detailed Project Work Plan

The Supplier shall provide a detailed project execution plan including:

- Work Breakdown Structure (WBS)
- project schedule and milestones
- dependencies between project activities
- resource allocation and responsibilities.

The work plan shall cover all project phases including:

- system analysis and design
- platform configuration and development
- system integration
- testing and validation
- deployment and operational stabilization.

#### **D. Risk Management Plan**

The Supplier shall submit a risk management plan including:

- identification of technical, operational, and delivery risks
- risk likelihood and impact assessment
- mitigation and contingency strategies
- mechanisms for ongoing monitoring and risk escalation.

#### **E. Quality Assurance and Testing Strategy**

The Supplier shall define the quality assurance and testing framework to be applied during system implementation.

The strategy shall include:

- unit testing procedures
- integration testing
- system testing
- performance and security testing
- User Acceptance Testing (UAT) procedures
- definition of acceptance criteria and testing environments.

#### **F. Deployment and Production Readiness Plan**

The Supplier shall describe the approach for deploying the system into production environments, including:

- environment preparation procedures
- deployment automation and configuration management
- rollback and contingency procedures
- production cut-over approach.

##### **2.1.2 Business Requirements Validation Document (BRD)**

The Supplier shall produce a **Business Requirements Validation Document (BRD)** confirming the functional and technical requirements necessary for implementing the National Open Data Portal Ecosystem.

The BRD shall validate the requirements specified in this RFP and translate them into implementable functional specifications.

The BRD shall include both **As-Is analysis** and **To-Be operational and technical specifications**.

##### **A. As-Is Analysis**

The As-Is analysis shall provide a concise assessment of the current technical environment relevant to the implementation of the platform, including:

- existing data management and publication practices within selected government entities
- current data formats and system architectures used for storing and managing datasets
- potential integration mechanisms for enabling data ingestion into the platform.

This analysis shall focus exclusively on **technical considerations relevant to system implementation**, rather than institutional governance structures.

## B. To-Be Architecture and Operational Model

The To-Be specification shall describe the future operational and technical model for the National Open Data Portal Ecosystem, including:

- data ingestion and transformation processes
- dataset cataloging and publication workflows
- API-based data access and developer services
- operation of the AI/ML model repository
- usage of the Developer Sandbox environment.

## C. Requirements Traceability Matrix

The Supplier shall prepare a Requirements Traceability Matrix (RTM) linking:

- RFP requirements
- validated business requirements
- system design elements
- implementation tasks
- testing and acceptance criteria.

### 2.1.3 Data Agencies Technical Enablement Plan & Adoption Plan

The Supplier shall submit a **Technical Data Provider Enablement Plan** describing the approach that will be used to technically enable participating government agencies and data providers to publish and maintain datasets through the National Open Data Portal Ecosystem. This plan shall focus strictly on **technical enablement**, while institutional coordination and stakeholder governance shall remain under the responsibility of the Project Implementation Unit (PIU).

The plan shall describe but not limited to:

- technical onboarding procedures for participating agencies
- supported data ingestion mechanisms including API integration, ETL pipelines, and structured file ingestion
- technical standards and templates for dataset preparation and metadata publication
- training approach for agency technical focal persons responsible for data publishing
- support mechanisms for assisting agencies during initial dataset onboarding.

***Note:** For complete details and requirements to be addressed in the required plan pls check section: 5.1 Platform Operationalization, Stabilization, and Adoption Enablement*

### 2.1.4 Deployment Architecture and Environment Design

The Supplier shall submit a **Deployment Architecture and Environment Design Document** confirming the final architecture to be implemented.

This document shall confirm and elaborate the architecture proposed in the Supplier’s proposal and define the final deployment model for the platform.

The document shall include:

- detailed logical and physical architecture diagrams
- development, testing, staging, and production environment structure
- cloud hosting configuration consistent with the Pakistan First Cloud Policy
- networking architecture and connectivity with the National Data Exchange Layer (NDEL)

- disaster recovery architecture and backup mechanisms
- security architecture implementation aligned with Section 1.7.3 Information Security Standards.

### 2.1.5 Operational Readiness and Knowledge Transfer Plan

The Supplier shall submit an **Operational Readiness and Knowledge Transfer Plan** describing how the platform will be supported, maintained, and transitioned to government operational teams following deployment.

The plan shall include:

- operational procedures for system administration and monitoring
- incident management and escalation processes
- support arrangements during the operational stabilization period
- operational documentation and system administration runbooks
- training programs for government technical teams responsible for operating the platform
- structured knowledge transfer activities enabling long-term government ownership and sustainability of the platform.

### 2.1.6 Deliverable Linkage

All documents, plans, and analyses described under Section 2.1 shall collectively constitute **Deliverable 1 – Project Foundation Pack**.

### 2.1.7 Physical Design

The Supplier shall be responsible for the end-to-end design, development, customization, and integration of all core, interoperable components that constitute the National Open Data Ecosystem (NODE). This includes but not limited to: (1) a **Web-Based Central National Open Data Portal (Data Management System)** to serve as the primary hub for data Ingestion, publishing, discovery, and consumption by the humans and machines; (2) a **Developer Sandbox** to provide a secure, cloud-based, web-based IDE environment for building and testing applications using the platform's data; (3) a **Data Extraction, Standardisation, and Transformation Layer** to automate the ingestion, cleansing, and harmonization of data from diverse sources into standardized, machine-readable formats; and (4) a central **API Gateway** to act as a secure, managed entry point for all programmatic access, enforcing security policies, rate limiting, and analytics. The entire integrated solution must be built on **API-First and modular principles based on Microservices** to ensure long-term sustainability, inherent scalability, and interoperability with existing systems.

#### 2.1.7.1 National Open Data Portal

The Supplier shall design, develop, customize, and implement a comprehensive, **web-based Data Management System (DMS)** to serve as the core of the National Open Data Portal. The system must provide distinct interfaces for public users (data consumers) and authorized users (data publishers/administrators) and must be built on a modular, and scalable architecture.

#### A. Core Data Management & Publishing:

The DMS must empower authorized users from government **Ministries, Departments, and Agencies (MDAs)** to manage the entire dataset lifecycle through an intuitive, web-based interface. Key features must include, but are not limited to:

- **Multi-Format Data Ingestion:** Support for multiple ingestion methods:
  - **API-Based Ingestion:** Ability to automatically harvest, validate, and ingest datasets and their metadata from API endpoints exposed by any other government agencies, systems, or third-party providers. This must

- **support scheduling, incremental updates, and error handling to ensure synchronization without manual intervention.**
  - **Manual Upload & Linkage:** Web-based interface for uploading tabular files or linking to remote resources (URLs).
  - **Direct Database connections for complex data ingestion**
  - **Harvesting from Portals:** Capability to harvest metadata from other National Open Data Portals.
  - **Support for a wide array** of data formats, including but not limited to: CSV, TSV, JSON, XML, XLS, XLSX, GeoJSON, Shapefile, PDF, and RDF.
- **Automated Metadata Management:** The system must **automatically extract and pre-populate** technical metadata (e.g., file size, format, encoding) upon data upload. It must enforce the use of a **mandatory, validated widely used enterprise metadata standards** for descriptive metadata, providing guided forms for users to complete fields such as title, description, publisher, source, license, temporal, and geospatial coverage. **For API-ingested data, the system must be able to map the source API's response structure to the required globally recognised enterprise metadata standards model.**
- **Data Validation and Previews:** Implementation of **configurable validation rules** (e.g., checks for file integrity, column structure in tabular data) at the point of upload. The system must generate **automatic data previews** (tabular views for structured data, map visualizations for geospatial data) to allow publishers to verify content before publication and consumers to preview it after.
- **Advanced Data Processing:** Support for **data transformation pipelines** (e.g., to convert non-standard formats into machine-readable ones like CSV/JSON) and the ability to **create and manage data APIs** automatically from uploaded tabular data, providing instant RESTful endpoints for developers.
- **Resource and Version Management:** Each dataset must support multiple "resources" (files). The system must provide full **version history** for datasets and resources, allowing users to see changes, revert to previous versions, and track the provenance of data. **This version history must also track changes made via automated API ingestion runs.**

## **B. Data Discovery & Public User Interface:**

The public-facing portal must be designed, developed, customised and integrated for maximum accessibility, performance, and ease of use, enabling citizens, researchers, and businesses to find, explore, and use data effectively without technical barriers.

- **Advanced Search, Filtering, and Discovery:**  
The portal must feature a powerful, faceted search engine built on a robust index, providing users with multiple pathways to discover data:
  - **Faceted Navigation:** Users must be able to filter search results dynamically by multiple criteria including **keyword, category, sub-category, organization (publisher), data format, license type, update frequency, and geospatial extent.**
  - **Spatial Search:** An integrated map interface must allow users to **visually search for datasets by drawing a bounding box** on a map, with results automatically filtered to datasets relevant to that geographical area.
  - **Search Enhancements:** The search must include **relevance ranking, autocomplete suggestions, "did you mean?" spelling correction, and support for synonyms** to improve findability.

- **Saved Searches & Subscriptions:** Users must be able to **save their search queries and subscribe to email alerts** for new datasets matching their criteria, fostering ongoing engagement.
- **Interactive Data Exploration and Visualization:**

The system must provide immediate value by allowing users to explore data directly in the browser, without requiring specialized software or downloads.

  - **Automated Previews:** For structured data (e.g., CSV, XLS), the system must generate an **interactive table preview** with sorting, pagination, and basic column filtering.
  - **Built-in Visualization Tools:** The portal must include integrated tools to **automatically generate basic charts and graphs** (e.g., bar, line, pie) from suitable tabular data. For geospatial data formats (e.g., GeoJSON, Shapefiles), it must render an **interactive map preview** with zoom, pan, and layer controls.
  - **Data Explorer:** The system should allow users to **create simple data views and visualizations** that can be embedded or shared via a URL, promoting data reuse and communication.
- **API-First and Programmatic Access:**

All data and functionality available through the web interface must be exposed via a comprehensive, well-documented programmatic API, making the platform a true developer resource.

  - **RESTful API:** A full-featured, RESTful API must provide **programmatic access to all catalog functions**, including searching, listing, and accessing datasets, resources, and their metadata. API responses must be in **JSON** and follow modern standards.
  - **API Documentation:** The solution must adopt an API-first design approach, ensuring all endpoints are fully documented in a **standardized API description format**, accessible through a user-friendly developer interface or documentation portal.
  - **Direct Data Access:** The API must provide **direct access to data** itself, not just metadata. For tabular data stored in the system's datastore, this must include the ability to **filter, sort, and query data remotely via API calls** using SQL-like syntax.
- **Accessibility and User-Centric Design:**
  - The entire public interface must be **fully compliant with WCAG 2.1 AA guidelines** to ensure accessibility for all users, including those with disabilities.
  - The design must be **responsive and function seamlessly on mobile devices, tablets, and desktops**.
  - The system should support **multi-lingual capabilities** (e.g., Urdu in addition to English) for key interface elements to maximize public reach and inclusivity.

### C. Administration, Governance, & Access Control:

A comprehensive, web-based administrative backend is mandatory component to govern the entire platform's lifecycle, enforce data governance policies, and ensure security and quality. This system must provide centralized control while allowing delegated administration to respective government entities.

- **Granular, Multi-Tiered Role-Based Access Control (RBAC):**

The system must implement a highly configurable permissions model that mirrors government structures.

- **Defined Roles:** The system must include, at a minimum, the following hierarchical roles with distinct capabilities:
  - **System Administrator:** Global super-user with full control over the entire platform, including system configuration, extension management, and access to all datasets and administrative functions across all organizations.
  - **Organization Administrator:** A user within a specific Ministry/Department/Agency (MDA) with full control over that organization's ecosystem. This includes the ability to **create, update, and delete datasets; manage the organization's public profile; and add, remove, and assign roles to users within their own organization.**
  - **Editor:** A user within an MDA who can **create, edit, and delete draft datasets** but cannot publish them publicly or manage other users.
  - **Member:** A user within an MDA who can **view datasets that are marked as private to the organization** but cannot edit or create them.
- **Custom Roles:** The RBAC system must be **extensible to allow for the creation of custom roles** with tailored sets of permissions to meet unique operational needs.

- **Configurable Publishing Workflows:**

To ensure data quality and compliance, the system must support a state-based workflow for dataset publication.

- **Workflow States:** The system must support configurable states such as **Draft, Pending Review, Approved, and Published.**
- **Permissions by State:** The ability to **assign permissions based on workflow state** (e.g., only users with an "Approver" role can move a dataset from "Pending Review" to "Published").
- **Notifications:** An integrated **email notification system** must alert relevant users (e.g., reviewers, approvers) when a dataset moves to a state requiring their action (e.g., "Pending Review").

- **Centralized User & Organizational Management:**

The admin interface must provide tools for seamless management of the platform's users and structure.

- **Organization Hierarchy:** Ability to **create a nested hierarchy of organizations** (e.g., a Federal Ministry containing multiple Divisions and attached Departments) to accurately reflect the government's structure.
- **User Management:** A single interface to **view, create, edit, disable, and audit all user accounts.** This must include filtering by organization and role.
- **Authentication Integration:** Support for **integration with external authentication providers** (e.g., Active Directory, OAuth, Pakistan's National Digital ID) for single sign-on (SSO) capabilities.

- **System Monitoring, Analytics, and Audit Trails:**

The platform must provide transparency into its usage and performance for strategic decision-making and accountability.

- **Dashboard Analytics:** A comprehensive dashboard displaying key metrics, including but not limited to: **total dataset count, newly published datasets, top keywords terms, most viewed and downloaded datasets, API usage statistics, and user registration trends.**
- **Audit Logging:** A **detailed, immutable audit trail** capturing all significant actions performed by all users, including dataset creation, modification, deletion, publication, user login, and permission changes. Logs must be searchable and exportable.
- **Reporting:** Capability to **generate custom reports** on platform activity and data publication performance for management and reporting to oversight bodies.
- **Harvesting and Federation Management:**  
Administrative tools must go beyond basic configuration to provide full control over the data ingestion pipeline.
  - **Harvest Source Management:** An interface to **add, configure, enable/disable, and monitor harvest sources** (e.g., URLs for other National Open Data Portals WAF endpoints, custom API endpoints).
  - **Job Scheduling & Monitoring:** Capability to **schedule harvest jobs** (e.g., run daily, weekly) and view the history and status of each job, including success/failure logs and error reports for troubleshooting.
  - **Content Validation:** Features to **review and validate harvested datasets** before they are published on the national portal, ensuring quality and relevance.

#### D. Compliance, Interoperability, and Promotion

The platform must be design, developed, customised and integrated as an open, interoperable, and compliant public good, ensuring it can function as a central hub within a broader national and international data ecosystem.

- **Strict Standards Compliance and Semantic Interoperability:**  
The system must be built to ensure maximum reuse and machine-actionability of data.
  - **Application Profile:** The core metadata schema must implement a **widely used metadata standards**, ensuring consistency and quality across all published datasets. This includes mandatory fields for publisher, release date, frequency, license, and geospatial coverage.
  - **Machine-Readable Exports:** The National Open Data Portal must support metadata interoperability compliant with globally **recognised standards**, capable of exporting and harvesting data in machine-readable formats.
  - **API Interoperability:** The system must support **standard data exchange protocols** for integration with academic, research, and international digital library infrastructures.
  - **Embeddable Content:** All dataset pages must provide **embed code capabilities** allowing datasets and visualizations to be seamlessly embedded in news articles, blogs, and other government websites.
- **Data Curation, Featuring, and Thematic Organization:**  
The platform must provide powerful tools for curators to organize and promote content effectively.
  - **Customizable Collections:** Administrators must be able to create **custom, thematic groupings (collections)** of datasets. These collections should support rich descriptions, featured images, and a curated list of datasets, which

- can be managed both manually and automatically based on tags or other metadata.
  - **Hierarchical Taxonomy:** Support for a **multi-level category taxonomy** (e.g., Sector -> Theme -> Sub-Theme) to allow for intuitive browsing and organization of datasets across government sectors.
  - **Promotion Mechanisms:** Tools to **feature datasets, collections, and applications** on the homepage and dedicated landing pages. This must include configurable banners, "dataset of the week" spotlights, and the ability to showcase real-world applications built using portal data.
  - **Usage Statistics Display:** The ability to **display download counts and view statistics** on dataset pages to signal popularity and value to users.
- **Universal Accessibility and Multi-Lingual Support:**
  - The portal must be accessible to all citizens, regardless of ability or language.
  - **WCAG 2.1 AA Compliance:** All public and administrative interfaces must fully conform to the **Web Content Accessibility Guidelines (WCAG) 2.1 Level AA**. This includes keyboard navigation, screen reader compatibility, color contrast ratios, and accessible forms.
  - **Multi-Lingual Capabilities:** The platform must support **full multi-lingual functionality for metadata and key user interface elements**, allowing for content and navigation in Urdu and other applicable national languages. This includes the ability to provide translations for dataset titles, descriptions, and group names.

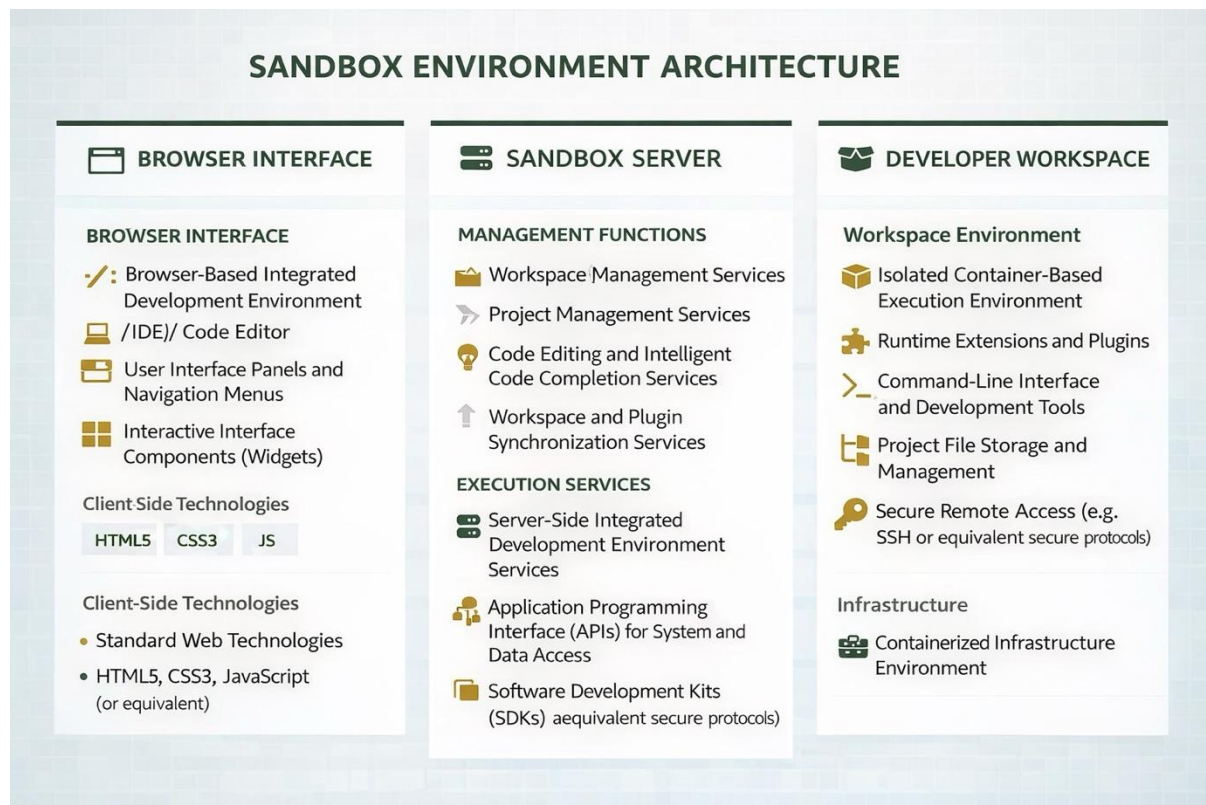
## E. Non-Functional Requirements

- **Ownership and Transparency:** Complete custom-developed source code, configuration, and deployment scripts shall be delivered to MoITT with perpetual usage rights.
- **Security:** Enforce encryption of data in transit and at rest, **multi-factor authentication for administrators**, and role-based access control (RBAC).
- **Interoperability:** Follow standards for data exchange to ensure interoperability.
- **Deployability:** Compatible with containerized and orchestrated environments (e.g., any standards-based container management system).
- **Resilience:** Include automated backup, restore, and fault-tolerance mechanisms.

### 2.1.7.2 Developer Sandbox

The system design, development, customisation and integration for the Developer Sandbox must be based on a modern, cloud-native, and web browser-based integrated development environment (IDE) platform. The primary objective is to provide a zero-setup, secure, and standardized workspace for developers, data scientists, and innovators to build, test, and share applications using the National Open Data Portal's APIs and datasets.

**Note to Proposers:** The Developer Sandbox is intended to enable application development and testing using Open Data Portal APIs and AI/ML assets under governed controls. A full-featured, web-based Integrated Development Environment (IDE) is required to support multiple programming languages, API integration, and application lifecycle management. Solutions based solely on Jupyter Notebooks or similar single-language, notebook-only environments will be considered insufficient to meet the requirements of this section, as they do not provide the necessary capabilities for application development and API testing.



### A. Container-Native Workspace Provisioning:

The core of the sandbox must be an on-demand, multi-tenant platform that provisions isolated developer workspaces instantly.

- **Workspace Stacks:** The system must provide **pre-defined, containerized workspace configurations ("stacks")** that are pre-loaded with specific programming languages (Python, R, Java, Node.js), frameworks, libraries, databases, and command-line tools relevant to data analysis and application development (e.g., Pandas, TensorFlow, Spring Boot).
- **Workspace Definition:** Each workspace must be defined by a **version-controlled configuration file** that codifies the development environment, ensuring consistency, reproducibility, and versioning of the tools and runtime.
- **Isolation & Security:** Workspaces must run in **isolated containers** with dedicated compute, memory, and storage resources. The system must ensure secure isolation between different users' workspaces.

### B. Universal, Browser-Based Multi-User IDE:

The development environment must be entirely accessible via a web browser, eliminating local setup and compatibility issues.

- **Rich Code Editor:** A powerful, browser-based editor must feature **syntax highlighting, code completion, error checking, and refactoring support** for a wide range of languages, powered by globally recognised protocol integrations.
- **Integrated Terminal:** Full access to a **Linux-based shell terminal** within each workspace for running commands, scripts, and version control operations (e.g., Git).
- **Debugging Capabilities:** Built-in **debugging tools** with support for setting breakpoints, stepping through code, and inspecting variables directly within the browser.

- **Native Git Integration:** Seamless integration with **Git source control** for cloning repositories, committing changes, and pushing code directly from the workspace.

### C. Integrated Data and API Ecosystem:

The sandbox must be deeply integrated with the National Open Data Portal to provide a seamless development experience.

- **Pre-loaded Data Catalogs:** Workspace stacks must include **pre-configured access to the Portal's APIs and a library of curated, synthetic, and anonymized datasets**, making them immediately available for development without complex configuration.
- **API Explorer & Credential Management:** An integrated tool for **discovering, browsing, and testing the National Open Data Portal's APIs via API Gateway** using interactive **Standard API** documentation.
- **Data Visualization Tools:** Inclusion of tools and libraries for **in-browser data visualization and analysis** (e.g., notebook interfaces, statistical analysis environments) within the workspace, enabling rapid prototyping and exploration.

### D. Application Development, Execution, and Sharing:

The environment must support the entire application development lifecycle within the browser.

- **Build, Run, and Debug in Cloud:** Developers must be able to **build, run, and debug their applications entirely within the remote workspace**. The system should provide mechanisms to **expose running applications on a public URL** for testing and demonstration purposes.
- **Snapshotting and Sharing:** Functionality for users to **create snapshots of their workspace state**, including code, running applications, and configuration. These snapshots must be **shareable via a URL** with other authenticated sandbox users, who can then open an identical workspace to collaborate or reproduce issues.
- **Project Templates:** A library of **pre-built project templates** for common use cases (e.g., "Create a Python Flask app to visualize dataset X") to accelerate development.

### E. Administration, Resource Management, and Multi-tenancy:

A robust administrative backend is required to manage the sandbox infrastructure and users.

- **Centralized Administration:** An admin console to **manage users, view active workspaces, and monitor system health and resource utilization** across the entire platform.
- **Resource Quotas:** The ability to **define and enforce resource limits** (CPU, memory, storage, number of workspaces) per user or user group to ensure fair usage and control costs.
- **Prvisioning of audit and access logs and capabilities to do search & analysis**
- **Customizable Workspace Stacks:** Administrators must be able to **create, version, and publish custom workspace stacks** tailored to the specific needs of different developer communities or projects

### F. Non-Functional Requirements

- **Ownership and Transparency:** Complete custom-developed source code, configuration, and deployment scripts shall be delivered to MoITT with perpetual usage rights.
- **Security:** Enforce encryption of data in transit and at rest, multi-factor authentication for administrators, and role-based access control (RBAC).

- **Interoperability:** Follow standards for data exchange to ensure interoperability.
- **Deployability:** Compatible with containerized and orchestrated environments (e.g., any standards-based container management system).
- **Resilience:** Include automated backup, restore, and fault-tolerance mechanisms.

### 2.1.7.3 Data Extraction, Transformation and Standardisation Layer

The Supplier shall be responsible for the end-to-end **design, development, and implementation** of the foundational data integration and processing layer. This work encompasses the complete lifecycle for ingesting raw data from diverse sources, including public and private entities; cleansing, harmonizing, and transforming it; and delivering it as standardized, machine-readable data that complies with the globally recognised metadata standards for publication via the Central National Open Data Portal and its APIs.

The successful **implementation** of this layer is critical for ensuring data quality, consistency, and reliability, forming the operational backbone that feeds the National Open Data Portal and the Developer Sandbox.

#### A. Source System Analysis & Connector Framework:

- Conduct a comprehensive cataloging of all data sources, including their formats (XLS/XLSX, database, API, XML, etc.) and access protocols.
- **Design, develop, and implement** a secure connector framework for data extraction. This includes building and deploying adapters for APIs, file-based feeds (e.g., via SFTP), and direct database connections.

#### B. ETL/ELT Pipeline Architecture:

- **Design and implement** a robust data pipeline architecture to orchestrate the end-to-end data flow.
- **Develop and configure** automated schedules, triggers, and workflows for reliable data ingestion from all defined sources.

#### C. Data Standardization & Transformation Logic:

- Develop and implement **rules and scripts for automated data validation, cleansing, and quality checks.**
- Design and build **canonical data models and schema mappings to actively convert heterogeneous data into unified JSON/CSV formats.**
- Implement **the process for automated metadata enhancement and provenance tracking.**

#### D. Integration with National Open Data Portal:

- **Develop and deploy** an automated process for injecting standardized data and its associated metadata into the National Open Data Portal's data store and catalog.

#### E. Erron Handling, Logging, and Monitoring:

- Implement **a comprehensive framework for handling pipeline failures, data quality issues, and managing retry mechanisms.**
- Build and configure **a monitoring and alerting system to ensure ongoing pipeline health and performance visibility post-implementation**

### F. Non-Functional Requirements

- **Ownership and Transparency:** Complete custom-developed source code, configuration, and deployment scripts shall be delivered to MoITT with perpetual usage rights.

- **Scalability:** Capable of extracting, transforming and standardising large number of datasets and metadata with responsive performance.
- **Security:** Enforce encryption of data in transit and at rest, multi-factor authentication for administrators, and role-based access control (RBAC).
- **Interoperability:** Follow standards for data exchange to ensure interoperability.
- **Deployability:** Compatible with containerized and orchestrated environments (e.g., any standards-based container management system).
- **Resilience:** Include automated backup, restore, and fault-tolerance mechanisms.

#### 2.1.7.4 AI/ML Analytical Model Library

##### A. Overview

The Supplier shall design, develop / customize and implement an **AI/ML Analytical Model Library** as an integral component of the National Open Data Platform ecosystem.

This component shall serve as a **centralized, version-controlled repository** for Artificial Intelligence and Machine Learning models developed by government entities, researchers, or authorized contributors.

The Library shall not function as a production-scale execution environment but as a **governed repository and management system** that enables secure registration, discovery, approval, and reuse of models for experimentation and innovation purposes.

The architecture shall follow **standards and modular design principles**, and the complete **custom-developed source code, configuration files, and technical documentation** shall be handed over to the Ministry of Information Technology and Telecommunication (MoITT) upon completion to ensure ownership, transparency, and long-term maintainability.

##### B. Functional Requirements

###### 1. Model Registration and Version Control

- Provide facilities for registering and cataloguing AI/ML models with unique identifiers and version tracking.
- Support standard lifecycle states such as Draft, Approved, Deprecated, and Archived.
- Maintain full traceability linking each model to its originating dataset, authoring entity, and date of approval.

###### 2. Metadata and Documentation Management

- Support upload of detailed Model Cards covering purpose, scope, ethical considerations, and limitations.
- Each model entry shall include structured metadata describing:
  - Model type and algorithm family
  - Training dataset reference and characteristics
  - Performance indicators and validation metrics
  - Applicable domain or use case
  - Responsible organization and approver

###### 3. Model Storage and Artifact Management

- Store serialized model artifacts, metadata, and associated documentation within the Library.
- Support large artifact handling through scalable storage backends.
- Maintain immutable audit trails of registration, updates, and version changes.

###### 4. Model Governance and Lifecycle Management

- Implement configurable approval workflows for model validation and publication.
- Authorized reviewers shall promote or retire models through controlled processes.
- Ensure digital integrity checks (e.g., checksum or signature verification) for all stored artifacts.

#### 5. Search, Discovery and Classification

- Provide intuitive search and filtering by domain, algorithm, training data source, or approval status.
- Enable thematic tagging, categorization, and ranking based on usage metrics.
- Offer both web-based and programmatic access for browsing and retrieval.

#### 6. API and Integration Interfaces

- Provide a set of secure, documented APIs for:
  - Registering and updating models
  - Retrieving metadata and download links
  - Integrating approved models into the Developer Sandbox or other authorized environments
- All APIs shall follow open-standard specifications (e.g., REST / OpenAPI) and enforce token-based authentication through the platform’s Identity and Access Management layer.
- Ensure compatibility with commonly used AI frameworks to facilitate interoperability and portability.

#### 7. Integration and Interoperability

- Integrate seamlessly with the National Open Data Portal, Data Transformation Layer, API Gateway, Ai/ML Analytical Model Library and Developer Sandbox.
- Allow dataset references from the Portal to be linked to models for traceability and reproducibility.
- Support future federation or synchronization with external AI repositories or academic innovation hubs, subject to approval.

#### 8. Auditability and Reporting

- Maintain immutable logs of submissions, approvals, downloads, and access events.
- Provide administrative dashboards summarizing model counts, contributors, and usage statistics.
- Support exportable reports for oversight and compliance reviews.

### C. Non-Functional Requirements

- **Ownership and Transparency:** Complete custom-developed source code, configuration, and deployment scripts shall be delivered to MoITT with perpetual usage rights.
- **Scalability:** Capable of storing and indexing large numbers of models and metadata entries with responsive performance.
- **Security:** Enforce encryption of data in transit and at rest, multi-factor authentication for administrators, and role-based access control (RBAC).
- **Interoperability:** Follow standards for data exchange to ensure interoperability.
- **Deployability:** Compatible with containerized and orchestrated environments (e.g., any standards-based container management system).
- **Resilience:** Include automated backup, restore, and fault-tolerance mechanisms for metadata and artifacts.

### D. Expected Outcomes

The AI/ML Analytical Model Library shall:

- Establish a national repository of reusable AI and ML models to stimulate innovation, research, and evidence-based policy formulation.
- Enable secure collaboration and knowledge sharing between academia, industry, and government.
- Provide standardized governance for model approval and ethical oversight.
- Strengthen the National Open Data Portal and Developer Sandbox by supplying ready-to-use, verifiable analytical models.
- Ensure long-term sustainability and technological independence of Pakistan’s AI-driven innovation ecosystem.

***Cross-Reference and Integration Note:***

The **AI/ML Analytical Model Library** shall operate as a complementary layer to the existing platform components, ensuring full functional alignment and interoperability across the ecosystem:

- **Linkage with the Data Extraction and Transformation Layer**

The Model Library shall reference datasets curated and standardized through the Data Transformation Layer, ensuring that models are trained and validated on high-quality, well-structured data consistent with national metadata and quality standards.

- **Integration with the Developer Sandbox**

The Library shall expose secure APIs and interfaces to the Developer Sandbox, enabling authorized users to browse, download, and test approved models within controlled environments for experimentation, innovation, or academic research purposes.

- **Alignment with the API Gateway and National Open Data Portal**

The API Gateway shall manage all interactions between the Model Library and external systems, ensuring secure, authenticated access to models and metadata. Approved analytical models and derived insights may be published back through the National Open Data Portal as value-added data services, supporting transparency and reusability.

- **Governance and Oversight**

The Model Library shall follow the same governance, access control, and audit mechanisms defined for the broader platform, maintaining compliance with the national data governance framework and MoITT’s security policies.

### **2.1.7.5 API Gateway**

The Supplier shall **design, develop, deploy, and configure a robust, secure, and high-performance API Gateway** serving as the **single unified entry point** for all programmatic interactions across the National Open Data Platform ecosystem — including the **National Open Data Portal, Developer Sandbox, AI/ML Analytical Model Library, and the Data Extraction, Transformation & Integration (ETL) Layer**.

The API Gateway shall provide centralized governance, routing, and protection for all internal and external API communications, ensuring **security, control, scalability, and visibility** across all connected components and external consumers.

#### **A. Centralized API Management & Routing**

- **Unified Access Layer:** Provide a single, well-documented base endpoint (e.g., `api.govdata.pk`) for all authorized API consumers, abstracting internal services and ensuring consistent access across subsystems.

- **Dynamic Request Routing:** Intelligently route requests to the correct backend component (National Open Data Portal, Sandbox, AI/ML Model Library, ETL Layer) based on URL path, headers, or other routing parameters.
- **API Versioning:** Implement flexible versioning mechanisms (URL-based, header-based, or parameter-based) to ensure backward compatibility during API evolution.
- **Service Discovery Integration:** Automatically register and discover backend services, enabling dynamic scaling and fault tolerance.

#### **B. Security, Authentication, and Authorization**

- **Centralized Identity Integration:** Fully integrate with the platform’s **Identity and Access Management (IAM)** layer for token-based authentication and authorization (e.g., OAuth 2.0, OpenID Connect, JWT).
- **API Key and Token Management:** Provide secure, automated issuance, renewal, and revocation of API keys and access tokens through an integrated self-service developer portal.
- **Access Control Policies:** Enforce fine-grained, role-based permissions for each API endpoint and method, aligning with data classification and access control policies.
- **Threat Protection:** Implement advanced security measures, including request validation, rate limiting, IP whitelisting, payload scanning, and protection against OWASP Top 10 vulnerabilities.
- **Transport Layer Security:** Enforce encrypted communication (HTTPS/TLS 1.3 or later) for all data in transit.

#### **C. Traffic Management, Rate Limiting, and Throttling**

- **Rate Limiting & Quotas:** Apply configurable rate limits and usage quotas per API key, user, or organization to prevent misuse and ensure equitable access.
- **Adaptive Throttling:** Automatically regulate high-traffic scenarios to preserve performance and protect backend components from overload.
- **Load Balancing:** Support distributed API traffic management across multiple backend instances for resilience and high availability.
- **Failover & Redundancy:** Ensure automatic failover between gateway nodes to maintain service continuity.

#### **D. Developer Experience and Ecosystem Integration**

- **Developer Portal:** Deliver an integrated developer portal enabling registration, API documentation access, key management, and subscription management.
- **Interactive Documentation:** Automatically generate and maintain interactive API documentation (e.g., Swagger/OpenAPI) reflecting all available APIs from the National Open Data Portal, Developer Sandbox, AI/ML Analytical Model Library, and ETL Layer.
- **Sandbox Connectivity:** Configure the gateway to support **Developer Sandbox integration**, providing controlled, mock, or test data endpoints to facilitate model experimentation and prototype testing.
- **Usage Analytics for Developers:** Offer real-time feedback and usage statistics to API consumers through the developer portal.

#### **E. Monitoring, Analytics, and Logging**

- **Administrative Dashboard:** Provide real-time dashboards displaying system health, request volumes, latency, error rates, top API consumers, and usage by dataset or endpoint.

- **Comprehensive Logging:** Maintain immutable, searchable logs for every transaction, including timestamp, source, endpoint, API key, response time, and error codes.
- **Anomaly Detection & Alerts:** Configure automated alerts for security anomalies (e.g., spikes in failed authentication, DDoS-like activity, or abnormal data access patterns).
- **Integration with Observability Stack:** Ensure compatibility with the platform’s monitoring tools (e.g., Prometheus, Grafana, Loki, or equivalent) for unified operational visibility.

#### **F. Compliance and Governance**

- The API Gateway must be fully **compliant with national data protection, privacy, and Cybersecurity regulations**.
- The custom-developed configurations, custom-developed source code, and deployment scripts must be **transferred to and owned by the Ministry of IT & Telecom (MoITT)** upon completion, ensuring long-term sustainability, operational continuity and the Purchaser's ability to maintain and operate the system independently.

#### **F. Non-Functional Requirements**

- **Ownership and Transparency:** Complete custom-developed source code/ Licenses, configuration, and deployment scripts shall be delivered to MoITT with perpetual usage rights.
- **Security:** Enforce encryption of data in transit and at rest, multi-factor authentication for administrators, and role-based access control (RBAC).
- **Interoperability:** Follow standards for data exchange to ensure interoperability.
- **Deployability:** Compatible with containerized and orchestrated environments (e.g., any standards-based container management system).
- **Resilience:** Include automated backup, restore, and fault-tolerance mechanisms.

##### **2.1.7.6 Security and Access Control**

The design and implementation of all five core components, the National Open Data Portal, Developer Sandbox, Data Transformation Layer, and API Gateway, Ai/ML Analytical Model Library **shall enforce Multi-Factor Authentication (MFA) and Single-Sign-On** for all administrative, privileged, and publisher-level access. The MFA implementation must adhere to industry best practices (e.g., NIST guidelines) and provide a flexible framework to support integration with designated national identity systems. This requirement is for ensuring the integrity and security of the platform and its data.

##### **2.1.7.7 Deployment at Staging Environment**

The Supplier shall deploy the fully integrated system including all components detailed in section “2.1.1.2 Physical Design” full and functional in a production like staging environment and facilitate the User Acceptance Testing process in accordance to the Section “E. Testing and Quality Assurance Requirements”

##### **2.1.7.8 Security Audit and Compliance**

Prior to the system being approved for production deployment, the Supplier shall achieve and demonstrate full compliance with industry-leading security standards. This process is mandatory for Production Readiness and shall be conducted as follows:

**Independent Security Audit and Penetration:** The Supplier shall engage a third-party Cybersecurity firm, which must be pre-approved in writing by the PIU, to conduct a comprehensive security assessment. The audit must, at a minimum, include:

- A full-scope penetration test targeting the entire integrated platform (all components specified in section “2.1.1.2 Physical Design”) and its infrastructure.
- A rigorous security audit against the latest versions of the OWASP Top 10, relevant NIST Cybersecurity frameworks, and ISO/IEC 27001 control objectives and security audit requirements deemed necessary by DEEP/ MoITT.
- The delivery of a detailed audit report from the firm, categorizing all findings by severity (Critical, High, Medium, Low) and providing explicit remediation recommendations.

#### 2.1.7.9 Vulnerability Remediation and Validation

The Supplier is obligated to address all vulnerabilities identified in the audit report according to the following mandatory timelines:

- **Critical and High-risk vulnerabilities must be remediated within the time frame as per the contract after receiving the final audit report.**
- All other vulnerabilities (Medium, Low) must be remediated as per a remediation plan submitted to and approved by the PIU.  
Upon remediation, the Supplier shall facilitate a full re-test by the same independent firm to validate the effectiveness of the fixes. All costs associated with the initial audit and re-test(s) shall be borne by the Supplier.

#### 2.1.8 Integrated System:

Upon successful completion of technical development, testing, and security audit, the Supplier shall deliver the fully integrated, operational system and a complete set of artifacts required for its sustainable operation, maintenance, and future enhancement.

##### 2.1.8.1 Project Handover Pack

This delivery package shall constitute the final handover and must include, but is not limited to, the following items as per the project's Scope of Work:

- **Custom-developed source code:** Complete, well-documented, and organized custom-developed source code for all components, including the National Open Data Portal, Developer Sandbox, Data Transformation Layer, API Gateway and Ai/ML Analytical Model Library with full version control history.
- **User’s Manual:** Comprehensive documentation for end-users, covering data consumers (citizens, researchers, businesses) and data publishers (government MDAs) on how to effectively use the platform for discovery, access, publishing, and sandbox development.
- **Operations Manual:** A complete manual for system administrators, detailing procedures for system monitoring, user management, backup and recovery, disaster recovery execution, routine maintenance, security patching, and performance tuning.
- **API Documentation:** Comprehensive, interactive API documentation in a standardized format for all RESTful endpoints exposed by the platform, ensuring developers can easily understand and consume the available services.
- **Deployment Runbooks & Configuration Scripts:** Detailed, step-by-step runbooks for deploying the system to staging and production environments, including configuration scripts, infrastructure-as-code templates, and rollback procedures.
- **Final System Documentation & Training Completion Report:** A consolidated package including all final technical, administrative, and architectural documentation, along with verifiable evidence of training delivery, attendance, and participant competency for all targeted user groups (administrators, publishers, developers).

- **As-Deployed Documentation Package:** Final architecture diagrams, network layouts, and configuration scripts reflecting the exact state of the production system.
- **Test Artifacts:** Complete set of test documentation, including Software Test Plans, Test Cases, Test Scripts, and Results from all testing phases (Unit, Integration, System, Performance, and User Acceptance Testing).
- **Security Audit Compliance Certificate:** The formal Compliance and Security Statement from the independent, PIU-approved auditor, confirming the system has passed all security tests and is deemed secure for production use.
- **Sustainability & Exit Strategy Plan:** A detailed plan covering operational handover, institutional governance, financial modeling, and a roadmap for future enhancements to ensure the platform's long-term viability beyond the project lifecycle.
- **Project Closure Archive:** A complete and consolidated archive of all project deliverables, final reports, and legal documents, forming the official project record.

### 2.1.8.2 System Integration (to other existing systems)

The Supplier MUST design, develop, configure, and implement the integration of the National Open

Data Platform ecosystem with multiple existing data sources and systems operated by public and private sector entities. This integration shall be achieved through the Data Extraction, Transformation and Standardization Layer, serving as the technical bridge between source systems and the National Open Data Portal. The Supplier must implement real-time monitoring dashboards and automated alerts for data ingestion failures, latency thresholds, or validation errors. The Supplier’s integration responsibilities shall include, but not be limited to, the following:

#### A. Source System Integration and Connectivity

- Conduct a comprehensive analysis and inventory of all data source systems to be integrated, including databases, APIs, flat files, and web-based portals.
- Develop secure, configurable **connectors and adapters** for each data source type, supporting integration via:
  - RESTful APIs
  - Direct database connections (e.g., SQL, PostgreSQL, Oracle)
  - Secure File Transfer Protocols (SFTP)
  - File-based ingestion from CSV, XLSX, XML, JSON, and other common formats.
- Ensure all data exchanges occur over **encrypted channels (HTTPS/TLS)** with authentication and authorization mechanisms enforced per PIU-approved security policies.
- Maintain full compliance with **Pakistan First Cloud Policy** and relevant national data protection frameworks.

#### B. Data Transformation and Standardization Layer (Integration Backbone)

- Implement a **robust ETL/ELT pipeline architecture** to automate end-to-end data flow from source systems to the National Open Data Portal.
- Configure data validation, cleansing, and transformation logic to harmonize heterogeneous data into standardized, machine-readable formats aligned with **globally recognised metadata standards**.
- Apply **schema mapping and canonical data models** to ensure interoperability between datasets originating from different ministries, departments, and agencies (MDAs).

- Embed **metadata enrichment and provenance tracking** to maintain dataset lineage, versioning, and publication audit trails.
- Integrate automated scheduling, monitoring, and retry mechanisms to ensure consistent and reliable data ingestion.

### **C. Functional Level of Integration**

- Enable seamless ingestion of structured, semi-structured, and unstructured datasets from diverse ministries, departments, and agencies.
- Facilitate real-time or scheduled synchronization of datasets between source systems and the National Open Data Portal.
- Ensure that the Data Transformation Layer acts as a **centralized middleware**, capable of integrating with both on-premise and cloud-hosted systems.
- Provide data validation reports, error logs, and monitoring dashboards accessible through the administrative console.

### **D. Integration with External and National Platforms**

- Ensure interoperability with national digital infrastructure components, including but not limited to:
- National Data Exchange Layer (NDEL) for secure, policy-compliant data sharing.
- Digital ID Systems for user authentication and authorization.
- Other sectoral data platforms (e.g., education, health, climate, and trade systems) for automated data harvesting and federation.
- Implement open APIs that comply with modern RESTful design principles, allowing third-party systems and developers to access published datasets securely.

### **E. Documentation**

The Supplier shall deliver the following as part of the integration activities:

- Comprehensive Integration Architecture Document (IAD) detailing all data flows, connectors, authentication mechanisms, and mapping specifications.
- Interface Control Documents (ICDs) describing each source system integration, including endpoints, data models, and synchronization logic.
- Integration Test Plans (ITPs) and test reports validating successful connectivity, transformation accuracy, and performance.
- Operational Runbooks outlining procedures for monitoring, troubleshooting, and maintaining integrations post-deployment.

### **F. Performance and Quality Requirements**

- All integrations must ensure data completeness and accuracy of at least 99.5% across ingestion runs.
- The integration layer must support scaling to accommodate a 50% annual increase in data source connections.

#### **2.1.8.3 Training and Training Materials**

The Supplier shall design and deliver a structured, multi-tiered **Capacity Building and Training Program** aimed at developing the operational, technical, and managerial capabilities of all relevant stakeholders involved in the National Open Data Platform ecosystem. All training must combine **conceptual learning with hands-on practice**, and be accompanied by comprehensive **training manuals, user guides, video tutorials, and reference documentation**.

Each training module must include **pre-assessments, post-assessments, and practical evaluations** to ensure knowledge transfer and measurable competency development.

### 2.1.8.3.1 User Training

#### Objective:

To build the capacity of general users, data publishers, and analysts to effectively operate, manage, and utilize the whole Informaiton system including all components.

#### Target Audience:

- Government Ministries, Departments, and Agencies (MDAs) – Data Publishers
- General Public and Civil Society Users – Data Consumers
- Researchers, Journalists, Startups, and Developers

#### Training Curriculum:

- Introduction to Open Data concepts, governance principles, and licensing frameworks.
- Portal usage: searching, filtering, and downloading datasets.
- Metadata entry, dataset publishing, and approval workflows.
- Using data visualization and interactive charting features.
- Accessing and using the API for dataset retrieval.
- Subscribing to data updates and managing user profiles.
- Introduction to Developer Sandbox and how to build applications using open datasets.

#### Delivery & Duration:

- Mode: Instructor-led workshops (in-person and virtual) supplemented with online learning materials.
- Duration: Minimum **2 days per participant group**.
- Language: English and Urdu.
- Materials: User Handbooks, Quick Reference Guides, Video Tutorials, and FAQs.

#### Assessment:

Participants must complete short quizzes and a practical publishing exercise to demonstrate their understanding. Certificates of completion shall be issued to all successful participants.

### 2.1.8.3.2 Technical Training

#### Objective:

To train system administrators, developers, and IT professionals in the technical operation, maintenance, customization, and integration of the system components — including the National Open Data Portal, Developer Sandbox, Data Transformation Layer, Ai/ML Analytical Model Library and API Gateway.

#### Target Audience:

- Technical teams and other designated government entities.
- System administrators, software engineers, and database experts.
- API developers and data engineers.

#### Training Curriculum:

The Supplier shall provide comprehensive capacity-building sessions for system administrators, data stewards, and technical personnel to ensure sustainable operation, maintenance, and enhancement of the National Open Data Platform ecosystem.

The training shall combine conceptual, technical, and hands-on modules covering the following areas:

#### *1. System Architecture & Platform Overview*

- Overview of the complete ecosystem: National Open Data Portal, Developer Sandbox, AI/ML Analytical Model Library, ETL/ELT Layer, and API Gateway.

- Understanding the logical and physical architecture, inter-component data flow, and integration mechanisms.
- Roles and responsibilities of each layer in the overall data lifecycle — ingestion, processing, publication, and consumption.
- Infrastructure overview: container orchestration, monitoring stack, and security layers.

## **2. National Open Data Portal Administration**

- User and organization management, including role-based access control (RBAC) and permission hierarchies.
- Dataset lifecycle management — ingestion, metadata validation, publishing, version control, and archival.
- Data quality management, approval workflows, and moderation processes.
- Governance dashboards, audit trails, and reporting for compliance and accountability.
- Localization and accessibility management (multi-lingual UI, WCAG compliance).

## **3. Developer Sandbox Administration & Innovation Enablement**

- Managing developer workspaces, user roles, and resource allocations (compute, storage, access rights).
- Configuring sandbox environments for experimentation with datasets, APIs, and AI/ML models.
- Implementing security boundaries between sandboxed sessions and production systems.
- Managing test data provisioning through the API Gateway for sandbox use cases.
- Monitoring sandbox utilization, enforcing quotas, and archiving inactive environments.

## **4. AI/ML Analytical Model Library Management**

- Overview of the AI/ML Model Library architecture, purpose, and interaction with National Open Data Portal and Sandbox.
- Model registration, versioning, documentation, and metadata management.
- Governance and approval workflows for new or modified models before publication in the library.
- Managing model lifecycle: submission → testing → approval → archival.
- Exposing and consuming model APIs securely within the ecosystem.
- Demonstration of integration scenarios (e.g., using published models in Sandbox projects).

## **5. Data Extraction, Transformation & Integration (ETL/ELT) Operations**

- Understanding data ingestion pipelines: API-based, manual upload, and harvesting from external portals.
- Configuring ETL/ELT workflows for data standardization and schema mapping.
- Implementing validation, cleaning, and enrichment routines for structured and unstructured data.
- Monitoring ETL pipeline performance, failure handling, and error recovery.
- Managing connectors and APIs for integration with external data providers.

## **6. API Gateway Administration & Ecosystem Integration**

- Gateway configuration and deployment for secure routing of all programmatic traffic.
- Managing authentication, authorization, rate limiting, and throttling policies.

- Configuring developer access via the API portal and managing API keys/tokens.
- Integrating National Open Data Portal, AI/ML Model Library, and Sandbox APIs under a unified gateway.
- Analytics and monitoring dashboards for API usage, performance, and anomaly detection.
- Logging, audit, and compliance configuration for all API transactions.

### **7. System Monitoring, Maintenance, and Troubleshooting**

- Centralized monitoring tools: dashboards for performance, resource utilization, and service health.
- Log aggregation, traceability, and alert configuration using monitoring stacks.
- Backup, disaster recovery, and business continuity procedures.
- Common troubleshooting workflows across components (Portal, ETL, APIs, Sandbox).

### **8. Security, Privacy, and Compliance**

- Identity and Access Management (IAM) policies and integration (SSO, OAuth2, MFA).
- Data security protocols, encryption standards, and secure storage handling.
- Anonymization and privacy preservation for public datasets and sandbox testing.
- Security auditing, vulnerability scanning, and incident response procedures.
- Compliance with national data governance and open data policies.

### **9. Hands-On Labs and Practical Sessions**

- Real-time exercises for publishing datasets, configuring pipelines, deploying models, and consuming APIs.
- Guided scenario-based training for cross-component workflows (e.g., dataset → ETL → AI model → API).
- Troubleshooting and optimization labs for administrators and developers.
- Knowledge transfer documentation and Q&A sessions.

#### **Delivery & Duration:**

- Mode: Hands-on lab-based training in a controlled environment.
- Duration: Minimum **5 days of technical workshops**.
- Tools: Sandbox environments, test datasets, and preconfigured developer workspaces.
- Materials: Technical Manuals, System Administration Guides, Architecture Diagrams, and Configuration Templates.

#### **Assessment & Certification:**

- Participants shall complete scenario-based practical exercises.
- Post-training technical assessments to be conducted.
- Certificates shall specify completion of “Technical Administration Training for National Open Data Platform.”

#### **2.1.8.3.3 Management Training**

##### **Objective:**

To equip senior management and policy decision-makers with strategic understanding of open data governance, sustainability frameworks, and oversight mechanisms to ensure the long-term success of the National Open Data Platform.

##### **Target Audience:**

- Senior officials and policymakers from MoITT and other relevant ministries.

- PIU management team, project directors, and department heads.
- Governance and compliance officers.

#### **Training Curriculum:**

- Strategic overview of the National Open Data ecosystem and its role in digital transformation.
- Governance, compliance, and interoperability frameworks.
- Data quality management and performance indicators.
- Change management and institutional adoption strategies.
- Monitoring and evaluation (M&E) framework for platform performance and sustainability.
- Review of international best practices for open data policy and innovation enablement.

#### **Delivery & Duration:**

- Mode: Executive briefings, seminars, and workshops.
- Duration: Minimum **1–2 days** per session.
- Materials: Executive Briefing Decks, Governance Framework Guides, and M&E Toolkits.

#### **Assessment:**

- Pre- and post-session knowledge assessments.
- Participants will be required to contribute to a draft “Open Data Sustainability and Governance Action Plan” as a practical exercise.

#### **General Training Deliverables (for all modules)**

The Supplier must provide:

- Complete set of **training manuals, user and technical guides**, and e-learning materials.
- **Recordings of virtual sessions** and workshop documentation.
- **Post-training evaluation reports** summarizing attendance, performance, and recommendations for continued capacity building.
- A consolidated **Training Completion Report** covering all training types, attendance, materials delivered, and participant evaluations.

#### **2.1.8.4 Data Conversion and Migration**

**The Supplier shall be responsible for the extraction, transformation, validation, and ingestion of datasets from multiple existing data sources (both public and private entities) into the newly developed National Open Data Platform. The Supplier shall perform comprehensive data onboarding and harmonization activities to ensure standardized, high-quality, and machine-readable datasets are available on the platform at launch.**

##### **A. Scope of Work**

- **Data Source Identification and Assessment:**  
Identify, document, and assess existing datasets residing across Ministries, Departments, and Agencies (MDAs) and other designated organizations, including their formats (CSV, XLS/XLSX, XML, JSON, GeoJSON, Shapefile, databases, APIs, etc.), size, and accessibility mechanisms.
- **Data Extraction and Connectivity:**

Design and implement secure connectors for data ingestion from diverse sources using APIs, database connections, file-based feeds (SFTP), or manual upload mechanisms in alignment with the Data Extraction, Standardization, and Transformation Layer requirements.

- **Data Conversion and Transformation:**

Transform all heterogeneous datasets into standardized, machine-readable formats (e.g., JSON, CSV) and harmonize them against approved **globally recognised** metadata standards. This includes:

- Schema mapping, normalization, and encoding standardization.
- Conversion of non-tabular formats to interoperable formats.
- Metadata enrichment and automated provenance tagging.

- **Data Validation and Quality Assurance:**

Conduct automated and manual validation processes to ensure data completeness, structural integrity, and metadata accuracy. Implement data profiling and quality checks (missing values, type mismatches, range validation) prior to ingestion.

- **Test Migration and Verification:**

Execute controlled test migrations to staging and UAT environments to verify the reliability of the end-to-end pipeline. Document and resolve discrepancies, and perform reconciliation between source and target datasets.

- **Final Migration to Production Environment:**

Upon successful UAT, migrate validated datasets and metadata to the production National Open Data Portal. Ensure version consistency, dataset lineage tracking, and integrity validation during and after the migration process.

- **Documentation and Audit Trail:**

Provide comprehensive documentation of the data migration process, including data mappings, validation scripts, error logs, and transformation rules. Maintain immutable audit trails of all data ingestion and migration activities.

## **B. Deliverables**

- Data Source Inventory Report
- Data Mapping and Transformation Document
- Validation and Quality Assurance Report
- Test Migration and Reconciliation Report
- Final Migration Completion Report

## **C. Quality and Compliance Requirements**

- All migration and transformation activities must comply with the **National Data Governance and Privacy Standards** and the **Pakistan First Cloud Policy**.
- Data quality assurance must achieve at least **99% accuracy and structural conformity**.
- All standardized datasets and metadata must be **interoperable, machine-readable, and compliant with open data standards**.

### **2.1.8.5 Documentation Requirements**

The Supplier shall prepare and **MUST** provide comprehensive, high-quality documentation for all components of the National Open Data Platform, covering both end-user and technical audiences. All documentation must be submitted in English (and Urdu where applicable for user-facing materials), ensuring clarity, consistency, and maintainability.

All documents shall undergo version control, quality review, and formal approval by the PIU prior to acceptance.

#### **2.1.8.5.1 End-User Documents**

The Supplier shall prepare all user-facing documentation necessary for effective adoption, operation, and maintenance of the National Open Data Portal and Developer Sandbox. These shall include but not be limited to the following:

##### **A. Types of End-User Documents**

- **User Manuals:**

Step-by-step guides for different user categories:

- Data Publishers (ministries/agencies uploading datasets)
- Data Consumers (citizens, researchers, developers accessing datasets)
- Developers (users accessing APIs and Sandbox)

- **Quick Start Guides:**

Concise, illustrated guides to introduce new users to the platform’s core features (data search, visualization, API usage, etc.).

- **Help Desk / FAQ Knowledge Base:**

Web-based reference integrated within the portal to assist users in troubleshooting common issues.

- **Training Handouts and Slide Decks:**

Training session materials for workshops and capacity-building programs for government and private-sector participants.

- **Video Tutorials (Optional):**

Short walkthrough videos for publishing data, using APIs, and building applications within the Sandbox environment.

##### **B. Content and Quality Requirements**

- Written in plain, easy-to-understand English, with Urdu translations for key user instructions.
- Include stepwise procedures, screenshots, and annotated diagrams.
- Compliant with accessibility standards (WCAG 2.1) for online help formats.
- Submitted in editable digital formats (DOCX, PDF, and HTML for online integration).
- Version-controlled and subject to iterative updates during project life-cycle.

#### **2.1.8.5.2 Technical Documents**

The Supplier shall develop a comprehensive suite of technical and system-level documents detailing the architecture, configurations, integrations, and operations of all implemented components, namely:

- National Open Data Portal (Data Management System)
- Developer Sandbox Environment
- Data Extraction, Standardization & Transformation Layer
- API Gateway and Security Framework
- Mi/ML Analytical Model Library

##### **A. Types of Technical Documents**

1. **System Requirements Specification (SRS):**

- Defines all functional and non-functional requirements, system modules, and performance criteria.
2. **System Architecture & Design Document (SADD):**  
Covers logical and physical architecture diagrams, component interactions, data flow models, API design, and integration architecture.
  3. **Database Design Document (DDD):**  
Describes schema design, entity-relationship (ER) diagrams, indexing, and metadata storage architecture.
  4. **Interface Control Document (ICD):**  
Details all internal and external system interfaces (APIs, data exchange formats, protocols, authentication mechanisms).
  5. **Deployment & Configuration Guide:**  
Step-by-step instructions for deploying each component in development, staging, and production environments (including containerization and orchestration setups).
  6. **Operations & Maintenance Manual:**  
Includes system administration procedures, routine maintenance schedules, and troubleshooting guides.
  7. **Security Implementation Document:**  
Outlines IAM configurations, encryption methods, MFA/SSO setup, and audit logging mechanisms.
  8. **Test Plans & Test Reports:**  
Include unit, integration, and system test procedures, UAT scripts, test case results, and issue tracking logs.
  9. **Backup and Disaster Recovery Plan:**  
Details backup schedules, recovery procedures, RTO/RPO targets, and validation methods.
  10. **API Documentation (Developer Reference):**  
Interactive and machine-readable documentation for all APIs exposed via the API Gateway.

## **B. Documentation Standards and Controls**

- All documents must follow **ISO/IEC/IEEE 26514** (Software Documentation Standard).
- Maintain **version history, author, and approval signatures** on every document.
- Deliver editable formats (DOCX, PDF, and HTML) with structured indexing and cross-references.
- Source-controlled documentation repository (e.g., Git-based or equivalent) accessible to the PIU for updates during project execution.
- Periodic document reviews and updates aligned with implementation milestones and system upgrades.

## **C. Reproduction and Delivery**

- Soft copies of all documents to be delivered in both editable and locked formats.
- Hard copies (if requested) to be bound, indexed, and labeled per component.
- Final approved documentation set shall serve as the baseline for support and future enhancements.

### 2.1.8.6 Requirements of the Supplier’s Technical and Data Curation Team

The Supplier **MUST** maintain a technical team of the following roles and skill levels during the Project Activities under the Contract:

**Team Composition Note:** Additional roles can be proposed if the bidder feels they are necessary (e.g., QA Lead, Data Analyst for any data components, etc.). The team structure should also indicate support staff (e.g., junior developers, QA testers) who will work under the key experts to deliver the work – while CVs for every junior member are not needed, the proposal should clarify the total team size and how the work will be organized.

All key team members must be fully available for the project (as per mutual consent) and any substitutions during execution must be approved by the client, with equal or better qualified personnel, as per standard World Bank contract conditions.

**Rule:** Replacement requires Purchaser approval; unauthorized change → 1 % penalty.

The CVs should be provided beforehand in the following format:

| Field                  | Details |
|------------------------|---------|
| Name                   |         |
| Position               |         |
| Qualification          |         |
| Experience (Years)     |         |
| Relevant Projects      |         |
| Role in Project        |         |
| Commitment (in months) |         |
| Signature              |         |

**Professional Certifications are preferred but optional.**

The proposed team must include (at a minimum) the following key experts:

#### 2.1.8.6.1 Technical Team

##### 1. Project Manager

- Key Responsibilities: Leadership, stakeholder management, project delivery (SOW 4.1–4.8).
- Basic Qualification: Bachelor’s in Business Administration, Computer Science, IT, or related.
- Relevant Experience: 10+ years in IT project management, including  $\geq 2$  large-scale data platforms/digital government projects. IFI/public sector experience preferred.
- Professional Certifications (Valid, Preferred): PMP, PRINCE2, or equivalent.
- Evidence Required: CV, academic & professional certificates,  $\geq 2$  project references.

##### 2. Solution Architect

- Key Responsibilities: Design of end-to-end architecture; API-first, secure, cloud-native (SOW 4.3).
- Basic Qualification: Bachelor’s in Computer Science/Software Engineering.
- Relevant Experience: 8+ years in system architecture;  $\geq 2$  projects as lead architect for integrated systems (portal, API gateway, ETL pipelines).
- Professional Certifications (Valid, Preferred): TOGAF

- **Evidence Required:** CV, academic & professional certificates, architecture diagrams, project references.

### 3. Lead Software Engineer (Frontend)

- **Key Responsibilities:** Lead the design, development, and optimization of the user-facing components of the platform, including the Open Data Portal and Developer interfaces. Ensure responsive design, usability, accessibility compliance, and performance optimization of web applications. Coordinate with backend, API, and UX teams to ensure seamless integration and consistent user experience across all modules (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor’s in Computer Science, Software Engineering, Information Technology, or related discipline.
- **Relevant Experience:** 8+ years in frontend development including  $\geq 2$  large-scale web platforms, open data portals, or digital government platforms. Experience with modern web architectures, frontend frameworks, and API-driven interfaces is required.
- **Professional Certifications (Valid, Preferred):** Relevant frontend development certifications or professional training in modern web technologies.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

### 4. Lead Software Engineer (Backend)

- **Key Responsibilities:** Lead the architecture and development of backend services, application logic, and system integration components supporting the Open Data Portal, API services, and platform modules. Ensure scalability, performance optimization, secure coding practices, and robust service orchestration across system components (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor’s in Computer Science, Software Engineering, Information Technology, or related discipline.
- **Relevant Experience:** 8+ years in backend system development including  $\geq 2$  large-scale distributed systems, data platforms, or digital government solutions. Experience with microservices architecture, APIs, and database systems required.
- **Professional Certifications (Valid, Preferred):** Relevant backend development or cloud platform certifications.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

### 5. Integration & Implementation Specialist

- **Key Responsibilities:** Design and implement system integrations between the ETL layer, Open Data Portal, API Gateway, AI/ML repository, and external data providers. Ensure reliable data exchange, API interoperability, and integration with government systems and data sources (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor’s in Computer Science, Information Systems, Software Engineering, or related discipline.
- **Relevant Experience:** 7+ years in enterprise system integration including  $\geq 2$  large-scale system integration or government digital platform projects involving APIs, data exchange frameworks, or middleware platforms.
- **Professional Certifications (Valid, Preferred):** Integration architecture or enterprise system certifications.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

### 6. AI/ML Expert

- **Key Responsibilities:** Design and implement the AI/ML repository architecture and support the lifecycle management of analytical models. Provide guidance on model

storage, metadata management, version control, and integration of analytical outputs with APIs and developer environments (SOW 4.1–4.8).

- **Basic Qualification:** Bachelor’s or Master’s in Data Science, Artificial Intelligence, Computer Science, or related discipline.
- **Relevant Experience:** 7+ years in data science, AI/ML systems, or analytical platforms including  $\geq 2$  projects involving machine learning model lifecycle management, data analytics platforms, or AI-driven government solutions.
- **Professional Certifications (Valid, Preferred):** Recognized certifications in AI, machine learning, or data science platforms.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

## 7. IT Infrastructure Specialist

- **Key Responsibilities:** Design and implement the infrastructure architecture supporting the platform including compute, storage, networking, container orchestration, and cloud services. Ensure high availability, disaster recovery, system monitoring, and secure infrastructure deployment across production, staging, and DR environments (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor’s in Computer Science, Information Technology, Network Engineering, or related discipline.
- **Relevant Experience:** 8+ years in IT infrastructure design and operations including  $\geq 2$  projects involving large-scale digital platforms, cloud infrastructure, or government IT systems.
- **Professional Certifications (Valid, Preferred):** Recognized cloud platform certifications or infrastructure management certifications.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

## 8. Business Analyst / Service Process Expert

- **Key Responsibilities:** Conduct requirements analysis, stakeholder consultations, and process mapping to support the development of the Business Requirements Document (BRD) and system design artifacts. Identify process improvements and define workflows for data publishing, metadata management, and platform operations (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor’s in Business Administration, Information Systems, Computer Science, or related discipline.
- **Relevant Experience:** 7+ years in business analysis or service process design including  $\geq 2$  projects involving digital government services, data platforms, or enterprise information systems.
- **Professional Certifications (Valid, Preferred):** Business analysis certifications such as CBAP, PMI-PBA, or equivalent.
- **Evidence Required:** CV, academic & professional certificates,  $\geq 2$  project references.

## 9. Product Owner

- **Key Responsibilities:** Define and manage product requirements, prioritize feature development, and ensure alignment between stakeholder needs and system functionality. Coordinate with development teams to manage product backlogs and ensure timely delivery of platform components (SOW 4.1–4.8).
- **Basic Qualification:** Bachelor’s in Computer Science, Business Administration, Information Systems, or related discipline.
- **Relevant Experience:** 7+ years in product management or digital product development including  $\geq 2$  projects involving large-scale digital platforms or public sector technology solutions.

- Professional Certifications (Valid, Preferred): Agile product management or product ownership certifications.
- Evidence Required: CV, academic & professional certificates,  $\geq 2$  project references.

#### **10. CX Expert (Customer Experience Expert)**

- Key Responsibilities: Design and evaluate the user experience of the Open Data Portal, developer interfaces, and related services. Ensure usability, accessibility, and user-centric design principles are applied across all system components to enhance adoption and engagement (SOW 4.1–4.8).
- Basic Qualification: Bachelor’s in Human-Computer Interaction, Design, Computer Science, Information Systems, or related discipline.
- Relevant Experience: 7+ years in user experience design or digital service design including  $\geq 2$  projects involving web platforms, digital government services, or data portals.
- Professional Certifications (Valid, Preferred): Recognized UX/UI design or human-centered design certifications.
- Evidence Required: CV, academic & professional certificates,  $\geq 2$  project references.

#### **11. Scrum Master**

- Key Responsibilities: Facilitate Agile development processes, coordinate sprint planning, backlog grooming, and team collaboration activities. Ensure Agile methodology is applied effectively across development teams and remove impediments to maintain project momentum (SOW 4.1–4.8).
- Basic Qualification: Bachelor’s in Computer Science, Information Technology, Business Administration, or related discipline.
- Relevant Experience: 7+ years in software development project environments including  $\geq 2$  projects using Agile methodologies for digital platforms or enterprise systems.
- Professional Certifications (Valid, Preferred): Certified Scrum Master (CSM), Professional Scrum Master (PSM), or equivalent.
- Evidence Required: CV, academic & professional certificates,  $\geq 2$  project references.

#### **12. Training and Knowledge Transfer Lead**

- Key Responsibilities: Design and implement training programs and knowledge transfer activities for government staff and data providers. Develop training materials, operational manuals, and capacity-building programs to ensure long-term platform sustainability and effective system adoption (SOW 4.1–4.8).
- Basic Qualification: Bachelor’s in Education, Information Systems, Computer Science, Business Administration, or related discipline.
- Relevant Experience: 7+ years in training delivery, knowledge transfer programs, or technology capacity building including  $\geq 2$  projects involving digital platforms or government IT systems.
- Professional Certifications (Valid, Preferred): Professional training or instructional design certifications.
- Evidence Required: CV, academic & professional certificates,  $\geq 2$  project references.

#### **13. Information Security Specialist**

- Key Responsibilities: Security posture, compliance, and audit management (SOW 4.6).
- Basic Qualification: Bachelor’s in Computer Science, Cybersecurity, or related.
- Relevant Experience: 7+ years in information security, including audits of platforms, API/IAM, data governance.

- Professional Certifications (Valid, Preferred): CISSP, CISM, CEH, or equivalent.
- Evidence Required: CV, academic & professional certificates, project references, description of frameworks applied.

#### **14. Data Engineer (ETL & Integration Specialist)**

- Key Responsibilities: Build and manage ETL/ELT pipelines; integrate multi-source datasets (SOW 4.3.3).
- Basic Qualification: Bachelor’s in Computer Science/Data Science.
- Relevant Experience: 5+ years in data engineering;  $\geq 2$  projects involving complex pipelines across multiple sources with diverse datasets using modern ETL tools.
- Professional Certifications (Valid, Preferred): Certifications related to any Modern ETL Tools.
- Evidence Required: CV, academic & professional certificates, pipeline descriptions, project references.

#### **15. Database Designer & Administrator**

- Key Responsibilities: Logical/physical database design; optimization; global recognised standards alignment.
- Basic Qualification: Bachelor’s in Computer Science or related.
- Relevant Experience: 7+ years in DB design/administration; large dataset management; SQL tuning; ETL/ELT support.
- Professional Certifications (Valid, Preferred): Oracle, PostgreSQL, MySQL, or equivalent DB certifications.
- Evidence Required: CV, academic & professional certificates, project references.

#### **16. UI/UX Designer**

- Key Responsibilities: User-centric, WCAG 2.1 AA-compliant designs for portals.
- Basic Qualification: Bachelor’s in Design, HCI, or equivalent with portfolio.
- Relevant Experience: 5+ years in UI/UX design; experience with data-rich platforms and accessibility standards.
- Professional Certifications (Valid, Preferred): UX/UI design or accessibility certifications.
- Evidence Required: CV, academic & professional certificates, portfolio link.

#### **17. Cloud/DevOps Engineer**

- Key Responsibilities: Cloud infra setup, CI/CD, automation, IaC (SOW 5.2).
- Basic Qualification: Bachelor’s in Computer Science/related.
- Relevant Experience: 5+ years in IT, including  $\geq 3$  years in Private or Public Cloud/DevOps deployments.
- Professional Certifications (Valid, Preferred): Any Modern Cloud Associate/Professional level certifications.
- Evidence Required: CV, academic & professional certificates, project references, CI/CD diagrams.

#### **18. Developer Sandbox Specialist / Platform Engineer**

- Key Responsibilities: Build/manage sandbox environment, IDE integration, container orchestration (SOW 4.3.2).
- Basic Qualification: Bachelor’s in Computer Science/related.
- Relevant Experience: 5+ years in software/platform engineering;  $\geq 1$  projects involving browser-based IDEs or Kubernetes-based developer environments.

- Professional Certifications (Valid, Preferred): Industry-recognized container orchestration certifications.
- Evidence Required: CV, academic & professional certificates, project references.

#### **2.1.8.6.2 Data Curation Team**

The Vendor shall propose a clearly defined Data Curation Team structure with minimum required roles as specified below.

The proposal shall include:

- Role definitions;
- Reporting hierarchy;
- Allocation model (full-time / part-time);
- Scalability plan aligned with dataset onboarding growth;
- Replacement and continuity plan.

#### **a. Mandatory Roles**

The Vendor shall provide, at minimum, the following roles:

#### **19. Data Curation Lead**

##### **Minimum Requirements:**

- Bachelor’s or higher degree in Information Management, Data Science, Computer Science, Statistics, or related discipline;
- Minimum 7+ years of experience in data governance, metadata management, or information systems;
- Demonstrated experience with open data or digital platforms;
- Experience in metadata standards implementation.

##### **Responsibilities:**

- Lead metadata governance framework;
- Approve dataset publication;
- Oversee metadata compliance;
- Coordinate with Vendor technical team;
- Act as primary point of contact for metadata governance.

#### **20. Metadata Specialist**

##### **Minimum Requirements:**

- Bachelor’s degree in Information Science, Library Science, Data Management, or related discipline;
- Minimum 5+ years of experience in metadata management or catalog systems;
- Familiarity with internationally recognized metadata standards.

##### **Responsibilities:**

- Validate metadata entries;
- Maintain controlled vocabularies;
- Perform metadata mapping verification;
- Conduct metadata quality audits.

#### **21. Data Quality Analyst**

##### **Minimum Requirements:**

- Bachelor’s degree in Data Science, Statistics, Computer Science, or related field;
- Minimum 5+ years of experience in data validation, data profiling, or quality assurance.

**Responsibilities:**

- Review dataset structural integrity;
- Identify anomalies and inconsistencies;
- Validate transformation outputs;
- Monitor ingestion quality metrics.

**22. Data Steward / Agency Liaison (Minimum One)****Minimum Requirements:**

- Minimum 5+ years of experience working with government or institutional data;
- Strong coordination and documentation skills.

**Responsibilities:**

- Coordinate with participating agencies;
- Provide guidance on metadata completion;
- Follow up on corrections;
- Support dataset updates.

**23. Data Scientist****Minimum Requirements:**

- Bachelor’s or Master’s degree in Data Science, Computer Science, Statistics, or related discipline
- Minimum 5+ years of experience in data science, statistical analysis, or analytical modeling

**Responsibilities:**

- Support data curation and ingestion activities for participating agencies
- Perform statistical analysis and data profiling to inform metadata enrichment and quality assurance
- Develop analytical models and data science solutions to support platform use cases
- Collaborate with the AI/ML Expert on model lifecycle management, ensuring clear separation of concerns between model repository governance (AI/ML Expert) and data preparation, analysis, and model development (Data Scientist)
- Provide technical guidance to data providers on data structuring and preparation
- Contribute to the continuous improvement of data ingestion pipelines and curation workflows

**2.1.9 End-to-End Data Lifecycle, Governance, and Curation Requirements****A. Metadata Schema Design, Configuration, and Governance Requirements****A.1 Objective**

The Vendor shall design, configure, and operationalize a standardized Metadata Schema for the National Open Data Portal Ecosystem (NODE) to ensure:

- Consistent dataset description across participating agencies;
- Alignment with internationally recognized metadata standards
- Structured validation and governance of metadata;
- Interoperability and automated harvesting capability;
- Long-term sustainability and schema evolution.

The Metadata Schema shall be centrally defined and system-enforced prior to large-scale dataset onboarding.

**A.2 Pre-Implementation Metadata Assessment**

Prior to configuring the Metadata Schema, the Vendor shall conduct a structured metadata assessment phase, which shall include:

### **A.2.1 Dataset Landscape Review**

The Vendor shall:

- Review representative sample datasets from participating agencies;
- Identify dataset categories (e.g., administrative, statistical, geospatial, microdata);
- Identify recurring metadata attributes and structural characteristics;
- Identify dataset-specific requirements such as temporal coverage, geographic coverage, update frequency, and access constraints.

The objective of this review shall be to inform a standardized, yet flexible, Metadata Schema applicable across agencies.

### **A.2.2 Policy and Regulatory Alignment**

The Vendor shall:

- Review applicable national data governance frameworks;
- Identify licensing requirements and access classifications;
- Identify mandatory publication attributes required under policy;
- Incorporate policy constraints into the metadata structure and validation rules.

### **A.2.3 Standards Alignment**

The Vendor shall design the Metadata Schema in alignment with internationally recognized metadata standards.

The Vendor shall:

- Identify core metadata elements required under such standards;
- Define mandatory and optional fields accordingly;
- Ensure compatibility with programmatic export and harvesting requirements.

## **A.3 Metadata Schema Design Requirements**

The Vendor shall design and configure a standardized Metadata Schema comprising, at minimum, the following layers:

### **A.3.1 Dataset-Level Metadata Fields**

The Metadata Schema shall include structured fields for dataset-level description, including but not limited to:

- Dataset Title
- Dataset Description
- Publisher / Owning Organization
- License
- Update Frequency
- Keywords / Tags
- Thematic Classification
- Contact Point
- Date of Issuance
- Date of Last Modification
- Spatial Coverage (where applicable)
- Temporal Coverage (where applicable)
- Access URL
- Download URL

The Vendor shall ensure that these fields are internally structured and capable of being mapped to **globally recognised** metadata vocabulary.

### **A.3.2 Resource-Level Metadata Fields**

For each dataset resource (file, API endpoint, or distribution), the Vendor shall configure fields including:

- Resource Name
- Format
- File Size
- Access or Download URL
- API Endpoint (where applicable)
- Date of Resource Update

Resource-level metadata shall correspond to distribution-level metadata in **globally recognised** standards.

### **A.3.3 Controlled Vocabularies**

The Vendor shall configure controlled vocabularies for key metadata elements, including:

- Thematic categories;
- License types;
- Organization registry;
- Resource formats;
- Update frequency classifications.

Free-text entry shall be restricted where structured vocabularies are required to maintain metadata integrity.

### **A.3.4 Mandatory and Conditional Fields**

The Vendor shall:

- Define mandatory metadata fields required for dataset publication;
- Define conditional fields applicable to specific dataset categories (e.g., geospatial datasets);
- Prevent dataset publication where mandatory metadata is incomplete.

The publication workflow shall enforce completeness of required metadata fields.

## **A.4 Metadata Schema Configuration within the Portal System**

The Vendor shall implement the approved Metadata Schema within the Portal System by:

- Configuring dataset and resource metadata fields in the system backend;
- Defining field types, constraints, and validation rules;
- Enforcing required fields at submission stage;
- Implementing controlled vocabularies;
- Ensuring extensibility for future schema evolution.

The Metadata Schema configuration shall directly determine the structure of dataset submission forms presented to participating agencies.

## **A.5 Metadata Validation and Enforcement**

The Vendor shall implement automated validation mechanisms to ensure metadata quality, including:

- Mandatory field validation;
- Controlled vocabulary enforcement;
- Date format validation;
- URL and endpoint validation;

- Duplicate dataset detection;
- License compliance verification.

Validation shall occur:

- At dataset submission;
- At dataset update;
- Periodically for already published datasets.

Datasets failing validation shall not proceed to publication.

#### **A.6 Metadata Review Workflow**

The Vendor shall configure a structured workflow supporting role-based metadata review and approval, including:

- Draft status;
- Under Review status;
- Revision Required status;
- Approved status;
- Published status;
- Archived status.

The workflow shall:

- Maintain a complete audit trail of changes;
- Record reviewer actions;
- Prevent unauthorized publication.

Metadata shall be subject to review by the designated Data Curation Team prior to publication.

#### **A.7 Metadata Export and Interoperability**

The Vendor shall configure automated metadata export functionality compliant with internationally recognized standards.

The system shall:

- Generate machine-readable metadata output;
- Support structured formats suitable for automated harvesting;
- Ensure consistency between internal metadata records and exported metadata;
- Enable selective harvesting by dataset, theme, or organization where applicable.

Metadata export shall be dynamically generated from validated internal records.

#### **A.8 Progressive Schema Evolution**

The Vendor shall design the Metadata Schema to support:

- Controlled addition of new metadata fields;
- Backward compatibility for previously published datasets;
- Version control of schema configurations;
- Structured migration procedures when schema changes are introduced.

Schema evolution shall be documented and approved prior to implementation.

#### **A.9 Roles and Responsibilities**

##### **A.9.1 Vendor Responsibilities**

The Vendor shall:

- Conduct metadata assessment;
- Design and configure the Metadata Schema;
- Align schema with **globally recognised** standards;

- Implement validation rules and workflows;
- Maintain export compliance;
- Document schema configuration.

## **A.9.2 Vendor Data Curation Team Responsibilities and Structure**

### **A.9.2.1 General Requirement**

The Vendor shall establish, deploy, and maintain a dedicated **Data Curation Team** responsible for ensuring metadata quality, dataset integrity, governance compliance, and sustained operational oversight throughout the contract duration.

The Data Curation Team shall operate as a structured, accountable function integrated with:

- The Metadata Schema framework;
- The Ingestion and ETL mechanisms;
- The Publication Workflow;
- The Programmatic Access Layer;
- The Ongoing Operationalization Phase.

The Data Curation Team shall remain active throughout all implementation and operational phases, including post-Go-Live.

### **A.9.2.2 Core Responsibilities**

The Data Curation Team shall, at minimum, perform the following functions:

#### **a. Metadata Governance**

- Review all dataset metadata submissions prior to publication;
- Verify completeness of mandatory fields;
- Ensure controlled vocabulary compliance;
- Ensure consistency in thematic classification;
- Verify correct license selection;
- Validate update frequency declarations;
- Ensure contact and publisher details are accurate;
- Confirm alignment with applicable metadata standards.
- Provide data science and analytical support: The Data Scientist shall perform statistical analysis, data profiling, and quality assessments to inform metadata enrichment and quality assurance.

No dataset shall be published without Data Curation Team approval.

#### **b. Data Quality Assurance**

- Review dataset structure for usability and clarity;
- Identify inconsistent column naming conventions;
- Detect incomplete or malformed data patterns;
- Flag duplicate datasets;
- Identify outdated datasets;
- Coordinate correction with originating agencies;
- Document data quality issues and remediation actions.

#### **c. Standards Compliance Monitoring**

- Monitor compliance with metadata standards;
- Ensure export-layer compatibility;
- Validate machine-readable output consistency;
- Periodically re-validate published datasets;

- Generate compliance reports.

**d. Ingestion Oversight**

- Review ETL mapping logic where applicable;
- Validate source-to-target schema alignment;
- Approve harvesting configurations before activation;
- Monitor automated ingestion logs;
- Flag recurring ingestion failures.

**e. Lifecycle Management**

- Monitor dataset update frequency adherence;
- Identify stale datasets;
- Initiate dataset archival or deprecation process where necessary;
- Maintain version tracking records;
- Ensure historical traceability.

**f. Continuous Improvement**

- Recommend metadata schema enhancements;
- Identify emerging metadata gaps;
- Propose improvements to controlled vocabularies;
- Support evolution of schema without disrupting published datasets.

**A.9.2.3 Staffing Scalability**

The Vendor shall:

- Propose an initial staffing model aligned with Phase-1 onboarding;
- Provide a scalability plan aligned with Deliverable D6 onboarding targets;
- Ensure that the team scales proportionately with dataset growth;
- Ensure no bottlenecks occur in review workflow.

The Vendor shall clearly define:

- Maximum review turnaround time;
- Expected dataset processing capacity per month;
- Service levels for metadata review.

**A.9.2.4 Reporting and Performance Monitoring**

The Data Curation Team shall produce periodic reports including:

- Number of datasets reviewed;
- Number of datasets approved/rejected;
- Metadata completeness score;
- Data quality issue log;
- Compliance metrics;
- Dataset update adherence metrics.

Reports shall be submitted monthly during operational phases.

**A.9.2.5 Continuity and Knowledge Transfer**

The Vendor shall:

- Ensure role continuity in case of staff turnover;
- Maintain documentation of curation processes;
- Ensure that no individual dependency risks operational stability;
- Provide structured knowledge transfer to designated authority where required.

**A.9.2.6 Independence and Governance Integrity**

The Data Curation Team shall operate independently from development and ETL teams to ensure:

- Objective review;
- No conflict of interest;
- Enforcement of governance standards.

The Vendor shall not bypass Data Curation review for expedited publication.

#### **A.9.2.7 Minimum Commitment**

The Data Curation Team shall remain operational:

- During implementation;
- During Go-Live;
- Throughout operationalization;
- During the entire contractual duration.

This function shall not be treated as optional or advisory.

This section now:

- Clearly defines responsibilities,
- Mandates HR structure,
- Prevents vendor under-staffing,
- Enforces accountability,
- Aligns with WB sustainability expectations.

If you wish, next we can:

- Define SLA-level KPIs for Data Curation Team performance, or
- Expand into Operational Governance & Escalation Framework, or
- Move to API Gateway structured RFP requirements.

#### **A.9.3 Participating Agency Responsibilities**

Participating agencies shall:

- Provide accurate and complete metadata through structured submission forms;
- Maintain dataset updates;
- Respond to review feedback.

Agencies shall not modify the Metadata Schema structure.

#### **A.10 Foundational Requirement**

The Metadata Schema shall be fully designed, configured, validated, and operational prior to large-scale dataset onboarding.

The Vendor shall ensure that metadata governance, validation, and interoperability mechanisms are integral to the Portal System architecture and not treated as post-implementation enhancements.

### **B. Data Ingestion, Transformation, and Publication Requirements**

#### **B.1 Objective**

The Vendor shall design, implement, and operationalize a modular, secure, auditable, and scalable data ingestion framework capable of supporting heterogeneous source systems across participating agencies.

The ingestion framework shall support:

1. Direct structured file ingestion;
2. Automated API-based harvesting;
3. ETL-driven transformation for complex or legacy systems.

All ingestion mechanisms shall integrate with:

- The standardized Metadata Schema;
- The Data Curation and Governance Workflow;
- The Publication and Programmatic Access Layer;
- The Metadata Export Layer;

### **B.1.1 Pre-Ingestion Foundational Steps**

*(Mandatory Before Scenario 1, 2, or 3 Execution)*

#### **A. Dataset Onboarding & Concept Definition**

Participating Agency

- Identifies dataset for publication (Agency)
- Provides dataset description, purpose, and sample data (Agency)
- Provides field-level documentation and data dictionary (Agency)

Data Curation Team

- Reviews dataset relevance and eligibility (Data Curation Team)
- Confirms data classification (Open / Restricted) (Data Curation Team with final approval by DEEP)
- Approves dataset onboarding for technical integration (Data Curation Team with final approval by DEEP)

#### **B. Target Data Schema Design (Portal Side)**

Vendor

- Reviews sample data and source structure (Vendor)
- Designs target data model (tables, fields, data types, constraints) (Vendor)
- Defines primary keys and indexing strategy (Vendor)
- Defines validation rules (Vendor)

Data Curation Team

- Reviews field naming consistency (Data Curation Team)
- Ensures cross-agency harmonization (Data Curation Team)
- Approves final target schema (Data Curation Team with final approval by DEEP)

Vendor

- Implements approved schema in portal database (Vendor)

#### **C. Metadata Schema Configuration (CatLog Layer)**

Vendor

- Configures dataset-level metadata fields (Vendor)
- Configures resource-level metadata fields (Vendor)
- Configures controlled vocabularies (Vendor)
- Configures mandatory field enforcement rules (Vendor)
- Configures metadata validation logic (Vendor)

Data Curation Team

- Reviews metadata structure alignment (Data Curation Team)
- Approves metadata schema configuration (Data Curation Team with final approval by DEEP)

#### **D. Upload Template / Integration Specification Preparation**

Depending on ingestion scenario:

***For File Based Scenario:***

Vendor

- Generates standardized CSV upload template based on approved target schema (Vendor)
- Provides data preparation guidelines to Agency (Vendor)

Agency

- Aligns dataset to prescribed template (Agency)

***For API Scenario:***

Vendor

- Defines API field mapping specification (Vendor)
- Defines expected response schema (Vendor)

Agency

- Confirms exposed API structure (Agency)

***For DB Connector Scenario:***

Vendor

- Performs source database schema mapping design (Vendor)
- Defines extraction queries and transformation rules (Vendor)

Agency

- Confirms read-only access credentials (Agency)

**E. Environment Preparation**

Vendor

- Configures Staging Environment (Vendor)
- Configures Production Structured Storage (Vendor)
- Configures ETL engine (Vendor)
- Configures ingestion service accounts (Vendor)
- Configures logging and audit framework (Vendor)

**F. Governance Lock-In Before First Ingestion**

Vendor

- Configures dataset workflow states (Draft → Review → Published) (Vendor)
- Configures role-based access control (Vendor)

Data Curation Team

- Confirms approval workflow enforcement (Data Curation Team)
- Validates “No Publication Without Approval” control (Data Curation Team with final approval by DEEP)

**B.2 Scenario A – Direct Structured File Ingestion (CSV or Equivalent)****B.2.1 Applicability**

This scenario applies where participating agencies provide file based datasets. Vendor should design a ETL component accessible to agencies preview and convert the data present in the provided file into structured tabular data in standard formats (e.g., CSV or equivalent).

**B.2.2 Vendor Requirements – File Ingestion Module**

The Vendor shall implement a structured file ingestion mechanism:

Participating Agency

- Prepares dataset using prescribed schema template (Agency)
- Logs into NODE ingestion interface (Agency)
- Uploads structured CSV file (Agency)

- File format and structural validation performed (Automatic – Portal System)
- Field mapping verified against predefined target schema (Automatic – Portal System, configured by Vendor)
- Data type checks, null checks, and constraint validation executed (Automatic – Portal System)
- Data temporarily loaded into Staging Environment (Automatic – ETL Engine)
- Data quality checks and normalization rules applied (Automatic – ETL Engine, configured by Vendor)
- Cleaned data loaded into Production Structured Storage (Automatic – ETL Engine configured by Vendor)
- Metadata entry completed or updated (Agency)
- Metadata validation executed (Automatic – Portal System)
- Dataset reviewed for compliance and harmonization (Data Curation Team)
- Governance approval granted (Data Curation Team with final approval by DEEP)
- Dataset status changed to Published (Automatic – Portal System after approval)
- Internal API endpoints auto-generated (Automatic – Portal System)
- API definition registered in API Gateway (Automatic – Gateway integration configured by Vendor)
- Web and API distribution enabled (Automatic – Portal System & API Gateway)

#### **B.2.2.1 File Acceptance and Validation**

The system shall:

- Accept structured/ tabular or unstructured files in widely used formats;
- Validate file integrity upon upload;
- Verify encoding compliance (UTF-8 or equivalent);
- Validate consistent column headers;
- Detect malformed rows;
- Generate a file integrity hash;
- Log upload timestamp and uploader identity.

The system shall reject corrupted or structurally invalid files.

#### **B.2.2.2 Structured Data Parsing**

Upon successful upload, the system shall:

- Parse column headers;
- Infer data types (text, numeric, date, boolean);
- Detect inconsistent data types;
- Enforce row-level validation rules where configured;
- Identify null or missing mandatory data columns (if applicable).

The parsed data shall be loaded into a structured tabular storage layer enabling query and API access.

#### **B.2.2.3 DataStore Activation**

The Vendor shall ensure that:

- Structured tabular data is stored in a queryable storage layer;
- API endpoints are automatically generated for structured querying;
- Pagination, filtering, and sorting are supported;
- Structured API responses are returned in machine-readable format (e.g., JSON).

**B.2.2.4 Error Handling and Logging**

The system shall:

- Log parsing errors;
- Log rejected rows;
- Provide error reports to submitting agencies;
- Prevent publication of datasets with critical ingestion failures.

**B.2.2.5 Governance Integration**

File ingestion shall not result in automatic publication.

Dataset publication shall only occur after:

- Metadata validation;
- Data profiling and quality analysis;
- Workflow review and approval;
- Confirmation by authorized reviewer.

**B.3 Scenario B – API-Based Automated Harvesting****B.3.1 Applicability**

This scenario applies where participating agencies expose structured data via secure APIs.

**B.3.2 Vendor Requirements – API Harvesting Framework**

The Vendor shall implement an automated harvesting framework capable of securely ingesting data from external APIs.

Participating Agency

- Exposes secure REST API endpoint (Agency)
- Provides API credentials and documentation (Agency)
- API connector configured (Vendor)
- Authentication parameters configured (Vendor)
- Scheduled harvesting job defined (Vendor)
- Automated data pull executed (Automatic – ETL/Harvester Engine)
- Raw API data loaded into Staging Environment (Automatic – ETL Engine)
- Schema validation and mapping to portal schema performed (Automatic – ETL Engine configured by Vendor)
- Data normalization and harmonization rules applied (Automatic – ETL Engine configured by Vendor)
- Data quality checks and reconciliation executed (Automatic – ETL Engine)
- Cleaned data loaded into Production Structured Storage (Automatic – ETL Engine configured by Vendor)
- Metadata synchronization verified (Automatic – Portal System)
- Dataset compliance reviewed (Data Curation Team)
- Governance approval granted (Data Curation Team with final approval by DEEP)
- Dataset published (Automatic – Portal System)
- Internal API endpoints auto-generated (Automatic – Portal System)
- API definition registered in API Gateway (Automatic – Gateway integration configured by Vendor)
- Web and API distribution enabled (Automatic – Portal System & API Gateway)

**B.3.2.1 Connector Configuration**

The Vendor shall configure API connectors that support:

- RESTful APIs;
- Secure authentication (API keys, OAuth2, or equivalent);
- Encrypted transport (HTTPS/TLS);
- Pagination handling;
- Rate limiting compliance;
- Retry and back-off mechanisms;
- Incremental update support (where source supports change tracking).

Connector configuration shall be documented and auditable.

#### **B.3.2.2 Source Schema Analysis**

The Vendor shall:

- Review the source API schema;
- Document field structure and data types;
- Identify nested or hierarchical elements;
- Define transformation rules where necessary.

#### **B.3.2.3 Data Schema Mapping**

The Vendor shall define a clear mapping between:

- Source API data fields;
- The Portal’s structured data schema (tabular storage layer).

This mapping shall include:

- Field renaming rules;
- Data type enforcement;
- Null handling strategy;
- Date normalization;
- Controlled vocabulary harmonization;
- Error handling for unexpected schema changes.

Mapping logic shall be documented and version-controlled.

#### **B.3.2.4 Harvest Execution**

The system shall:

- Execute harvesting jobs at defined intervals;
- Validate API response codes;
- Validate structural consistency;
- Reject malformed responses;
- Log harvesting attempts;
- Log success and failure events;
- Trigger alerts upon repeated failures.

#### **B.3.2.5 Data Loading**

Harvested data shall be:

- Transformed into structured tabular form;
- Loaded into the queryable storage layer;
- Versioned if required;
- Traceable to ingestion timestamp.

#### **B.3.2.6 Change Management**

The system shall:

- Detect source schema changes;

- Flag schema inconsistencies;
- Prevent silent ingestion of incompatible structures;
- Notify administrators for review.

### **B.3.2.7 Governance Integration**

Harvested datasets shall undergo:

- Metadata validation;
- Review workflow approval;
- Controlled publication.

Automated harvesting shall not bypass governance controls.

## **B.4 Scenario C – ETL-Based Transformation for Complex Sources**

### **B.4.1 Applicability**

This scenario applies where source systems:

- Are legacy or non-standard;
- Require joining multiple tables;
- Require transformation or cleaning;
- Provide non-structured formats;
- Require normalization prior to publication.

### **B.4.2 Vendor Requirements – ETL Framework**

The Vendor shall implement a web-based ETL platform capable of handling structured and semi-structured sources.

Participating Agency

- Grants secure, read-only database access (Agency)
- Secure database connector configured (Vendor)
- Source schema profiling performed (Vendor)
- Extraction queries defined (Vendor)
- Scheduled ETL job configured (Vendor)
- Raw data extracted from source database (Automatic – ETL Engine)
- Extracted data loaded into Staging Environment (Automatic – ETL Engine)
- Schema comparison and validation executed (Automatic – ETL Engine configured by Vendor)
- Data quality checks and reconciliation performed (Automatic – ETL Engine)
- Transformation and normalization rules applied (Automatic – ETL Engine configured by Vendor)
- Mapping to predefined portal target schema enforced (Automatic – ETL Engine)
- Cleaned data loaded into Production Structured Storage (Automatic – ETL Engine configured by Vendor)
- Metadata validation executed (Automatic – Portal System)
- Dataset compliance and harmonization reviewed (Data Curation Team)
- Governance approval granted (Data Curation Team with final approval by DEEP)
- Dataset published (Automatic – Portal System)
- Internal API endpoints auto-generated (Automatic – Portal System)
- API definition registered in API Gateway (Automatic – Gateway integration configured by Vendor)
- Web and API distribution enabled (Automatic – Portal System & API Gateway)

**B.4.2.1 Source Connectivity**

The ETL platform shall support:

- Secure database connections;
- File-based ingestion;
- API connectors;
- Secure credential management;
- Encrypted transport protocols.

**B.4.2.2 Data Profiling**

The Vendor shall perform structured data profiling to:

- Identify data quality issues;
- Detect duplicate records;
- Identify missing values;
- Identify inconsistent formats;
- Document transformation requirements.

Profiling results shall be documented.

**B.4.2.3 Transformation Logic**

The ETL system shall support:

- Field mapping;
- Table joins;
- Code harmonization;
- Date standardization;
- Data type conversion;
- Null value handling;
- Deduplication;
- Validation rules;
- Derived field computation.

All transformation logic shall be documented and version-controlled.

**B.4.2.4 Automation and Scheduling**

The ETL system shall support:

- Scheduled execution;
- Incremental updates;
- Full refresh operations;
- Failure notification;
- Rollback mechanisms.

**B.4.2.5 Output Standardization**

The ETL output shall:

- Produce structured tabular data suitable for queryable storage;
- Maintain consistent column naming conventions;
- Enforce standardized schema definitions;
- Log transformation metadata (execution time, record count, errors).

**B.4.2.6 Data Lineage and Traceability**

The system shall maintain:

- Source identification;

- Transformation history;
- Execution logs;
- Version tracking;
- Audit trails.

#### **B.4.2.7 Governance Integration**

Transformed datasets shall:

- Require metadata entry;
- Undergo validation;
- Undergo review workflow;
- Be approved prior to publication.

### **B.5 Cross-Cutting Requirements for All Scenarios**

The following requirements shall apply to all ingestion scenarios:

#### **B.5.1 Security**

- All ingestion processes shall use secure protocols;
- Authentication and authorization shall be enforced;
- Access logs shall be retained;
- Sensitive data detection mechanisms shall be implemented where applicable.

#### **B.5.2 Auditability**

The system shall maintain:

- Ingestion logs;
- User action logs;
- Transformation logs;
- Publication approval logs.

Logs shall be tamper-evident.

#### **B.5.3 Versioning**

The system shall support:

- Dataset version tracking;
- Resource version history;
- Rollback capability.

#### **B.5.4 Performance**

The ingestion framework shall:

- Handle large datasets efficiently;
- Support incremental updates;
- Avoid full reloads when unnecessary;
- Scale horizontally as required.

#### **B.5.5 Interoperability**

All published datasets shall:

- Be accessible via programmatic APIs;
- Support machine-readable formats;
- Be compatible with **globally recognised** metadata export standards

#### **B.5.6 Governance Enforcement**

No dataset shall be published unless:

- Mandatory metadata fields are complete;
- Validation checks pass;

- Review workflow approval is granted.

Automated ingestion shall not override governance controls.

## **B.6 Foundational Principle**

The Vendor shall ensure that:

- Ingestion mechanisms are modular and decoupled;
- Data transformation and metadata governance are separate but integrated layers;
- Publication is controlled and auditable;
- Automation does not bypass validation;
- Architecture prevents silent data corruption or uncontrolled publishing.

## **C. Core Responsibilities**

### **C.1 Metadata Schema Design Approval**

The Vendor shall prepare and submit a **Metadata Schema Design and Configuration Report** prior to system configuration. The report shall include:

- Dataset-level metadata fields;
- Resource-level metadata fields;
- Mandatory and optional field classification;
- Controlled vocabularies;
- Validation rules;
- Mapping to internationally recognized metadata standards.
- Export configuration logic.

No metadata schema configuration shall be finalized or deployed without formal written approval from the designated authority.

### **C.2 Controlled Vocabulary Governance**

All controlled vocabularies shall:

- Be centrally managed within the system;
- Be editable only by authorized administrative roles;
- Maintain version history of changes;
- Log all additions, modifications, or deletions;
- Prevent unauthorized free-text override where structured selection is required.

Changes to controlled vocabularies shall not retroactively alter published metadata without audit traceability.

### **C.3 Metadata Validation Service Levels**

The Vendor shall define and adhere to service levels for metadata validation and review processes.

At minimum:

- Automated validation feedback shall be generated immediately upon submission;
- Manual review by the Data Curation Team shall occur within a defined maximum turnaround time;
- Rejected submissions shall include structured deficiency reports.

The Vendor shall propose measurable turnaround times in the Technical Proposal.

### **C.4 Data Curation Team Resource Commitment**

The Vendor shall ensure that:

- The Data Curation Lead and Metadata Specialist roles are full-time dedicated positions during implementation and operationalization phases;

- Roles shall not be combined without prior written approval;
- The proposed team structure shall clearly indicate Full-Time Equivalent (FTE) allocation for each role;
- Substitution of key personnel shall require prior approval and documented equivalency.

Under-resourcing of the Data Curation Team shall constitute non-compliance.

### **C.5 Schema Change Management and Ingestion Suspension**

In the event of detected source schema changes during automated harvesting or ETL processes:

- Ingestion shall be automatically suspended;
- A structured alert shall be generated;
- Impact assessment shall be conducted;
- Ingestion shall resume only after documented review and approval.

Silent auto-adjustment of schema mappings shall not be permitted.

### **C.6 ETL and Transformation Change Control**

Any modification to transformation logic shall:

- Be version-controlled;
- Be documented with change rationale;
- Include impact analysis;
- Be approved prior to deployment;
- Preserve traceability of previous dataset versions.

Unauthorized modification of transformation rules shall not be permitted.

### **C.7 Performance and Scalability Baseline**

The Vendor shall define minimum supported capacity thresholds, including:

- Maximum supported dataset size;
- Maximum supported record volume per dataset;
- Ingestion throughput capacity;
- Concurrent API query handling capacity.

These thresholds shall be explicitly stated in the Technical Proposal and shall form part of performance acceptance criteria.

Vague performance commitments shall not be accepted.

### **C.8 Architectural Modularity and Separation of Concerns**

The Vendor shall ensure that:

- Data ingestion mechanisms are modular and independently deployable;
- Metadata governance components are logically separated from data storage mechanisms;
- Publication workflows cannot be bypassed by ingestion automation;
- API exposure layers are decoupled from internal storage layers;
- No single monolithic component performs ingestion, governance, storage, and exposure functions without logical separation.

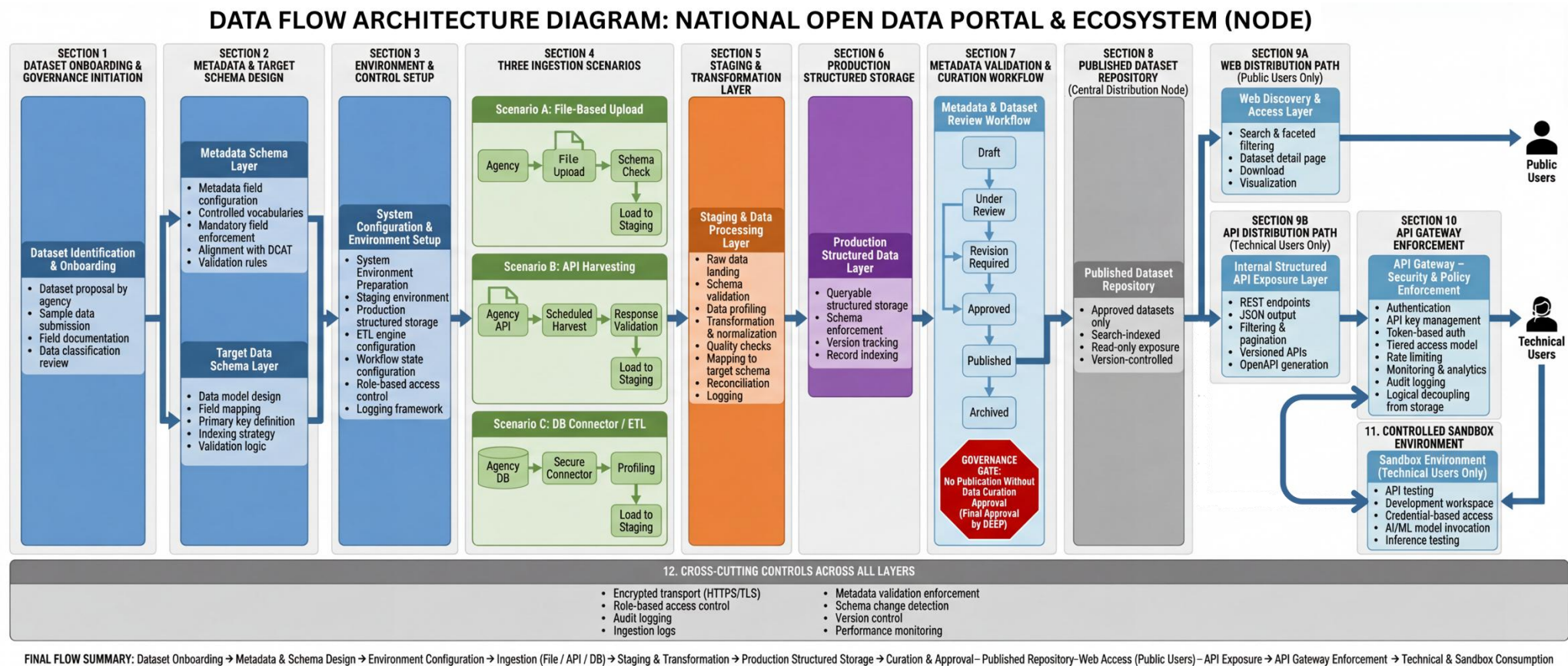
The system architecture shall prevent systemic failure due to single-point dependency.

### **C.9 Audit and Traceability Integrity**

All ingestion, transformation, validation, review, and publication actions shall:

- Be logged with timestamp and actor identity;

- 
- Be retained for audit purposes;
  - Be protected against unauthorized modification;
  - Be exportable for compliance review.



## **D. DATA ACCESS, DISCOVERY, VISUALIZATION, AND PROGRAMMATIC CONSUMPTION REQUIREMENTS**

### **D.1 Objective**

The Vendor shall design, configure, and operationalize the complete post-publication data access layer to ensure that all published datasets are:

- Discoverable via web interface;
- Searchable and filterable;
- Viewable and downloadable;
- Visualizable;
- Programmatically accessible through secure APIs via API Gateway;
- Consumable within the controlled Sandbox environment;
- Governed via secure API Gateway enforcement.

The solution shall support both:

- Non-technical users (web interface);
- Technical users (API and Sandbox access).

### **D.2 Web-Based Dataset Discovery and Search**

#### **D.2.1 Search Engine Configuration**

The Vendor shall implement a search and indexing engine that:

- Indexes dataset-level metadata;
- Indexes resource-level metadata;
- Supports keyword search;
- Supports full-text search;
- Supports faceted filtering by:
  - Theme
  - Organization
  - Format
  - Update frequency
  - License
  - Date range;
- Supports pagination;
- Returns relevance-ranked results.

Search indexing shall automatically update upon dataset publication or modification.

#### **D.2.2 Metadata-Based Filtering**

The Vendor shall configure:

- Faceted navigation;
- Thematic browsing;
- Organization-based browsing;

- Controlled vocabulary filtering;
- Sorting by date, popularity, relevance.

### **D.2.3 Dataset Detail Page**

For each published dataset, the system shall display:

- Complete validated metadata;
- Resource listing;
- Download links;
- API access details;
- Update frequency;
- Publisher information;
- Version history (where applicable);
- Contact information;
- License details.

The dataset page shall dynamically reflect the latest validated metadata.

## **D.3 Dataset Download and File Access**

The Vendor shall ensure:

- All downloadable resources are accessible via secure URLs;
- File integrity is preserved;
- Download events are logged;
- Download size is indicated;
- Rate limiting mechanisms prevent abuse;
- Download endpoints are decoupled from internal storage.

Where large datasets exist, the Vendor shall provide:

- Partial download capability (if supported);
- Compressed file options where applicable.

## **D.4 Built-In Data Visualization**

### **D.4.1 Visualization Capabilities**

The Vendor shall provide integrated visualization tools capable of:

- Rendering tabular previews;
- Generating charts (bar, line, pie, etc.);
- Time-series visualization;
- Basic geospatial visualization (where spatial data exists);
- Exporting visual outputs (image or embeddable format).

Visualization shall operate on structured data and shall not require dataset duplication.

### **D.4.2 Visualization Governance**

Visualization shall:

- Reflect live dataset values;
- Not modify source data;
- Not store separate altered versions;
- Respect dataset access controls.

## **D.5 Programmatic Access Layer**

### **D.5.1 Structured Data API Exposure**

The Vendor shall ensure that upon successful dataset publication, the system shall automatically generate structured internal API endpoints corresponding to the approved dataset.

For each published dataset, the system shall:

- Automatically generate a RESTful API endpoint;
- Expose data in machine-readable formats (e.g., JSON);
- Support filtering, pagination, sorting, and parameterized queries;
- Support dataset versioning where applicable;
- Dynamically generate and maintain an OpenAPI (or equivalent machine-readable API specification) definition for each dataset API;
- Ensure that API endpoint generation is triggered only after completion of the metadata validation and publication workflow.
- The Vendor shall ensure that all internally generated API endpoints:
  - Are not directly accessible from external networks;
  - Are exposed externally only through the configured API Gateway layer;
  - Are logically decoupled from underlying database structures.

API endpoints shall be dynamically linked from the dataset detail page, referencing the externally managed API Gateway endpoint rather than internal service URLs.

### **D.5.2 API Documentation and Developer Metadata**

The Vendor shall configure automatic API documentation generation derived from the machine-readable API specification.

For each dataset API, the system shall generate and publish:

- API name and description;
- Base URL (Gateway-managed endpoint);
- Supported HTTP methods;
- Supported query parameters and filters;
- Pagination parameters;
- Authentication requirements;
- Applicable rate limits and access tier;
- Example requests and example responses;
- API version information.
- The Vendor shall ensure that:
  - API documentation is synchronized automatically upon dataset publication, modification, or version change;
  - Public APIs are discoverable through the developer interface where applicable;
  - Restricted APIs are visible only to authenticated and authorized users in accordance with access policies;
- Documentation reflects Gateway-enforced policies and not internal service endpoints.

## **D.6 API Gateway Configuration and Enforcement**

The Vendor shall deploy and configure an enterprise-grade API Gateway layer between all external consumers and the Portal System.

The API Gateway shall serve as the sole externally accessible programmatic access point for all dataset APIs.

Under no circumstances shall internal API endpoints be directly exposed to external consumers.

### **D.6.1 Automatic API Registration and Publication**

The Vendor shall ensure that:

- Upon dataset publication, the internally generated API definition (OpenAPI or equivalent) is automatically registered with the API Gateway;
- The Gateway creates a managed API proxy endpoint mapped to the internal service;
- External API URLs are generated under the official portal domain structure;
- API publication in the Gateway occurs only after dataset publication approval;
- API lifecycle status (Draft, Published, Deprecated) is synchronized between the Portal and the API Gateway.

The Vendor shall ensure that external API endpoints follow a consistent and version-aware structure (e.g., /api/v1/...), without exposing internal service topology.

### **D.6.2 Authentication and Authorization**

The API Gateway shall support:

- Public (unauthenticated) access for explicitly designated open APIs;
- Authenticated access for higher-tier usage;
- API key lifecycle management;
- Token-based authentication mechanisms (e.g., OAuth2 or equivalent);
- Role-based access control enforcement;
- Revocation and regeneration of credentials;
- Enforcement of access policies defined at dataset or API level.

Authentication policies shall be centrally managed within the Gateway.

### **D.6.3 Tiered Access Model**

The Vendor shall implement a configurable tiered API access model including:

- Public tier (basic access with defined rate limits);
- Registered tier (higher limits for authenticated users);
- Institutional tier (elevated access for approved entities).
- The Gateway shall enforce:
  - Rate limits per API;
  - Quotas per consumer;
  - Burst control and throttling;
  - Configurable policy updates without requiring redeployment of APIs.

### **D.6.4 Rate Limiting, Protection, and Abuse Prevention**

The API Gateway shall:

- Enforce request limits in real time;

- Prevent denial-of-service patterns;
- Detect abnormal usage behavior;
- Log excessive or suspicious activity;
- Trigger configurable alerts for threshold violations;
- Support IP-based or token-based throttling policies where required.

#### **D.6.5 Monitoring, Logging, and Analytics**

The API Gateway shall:

- Log all API calls with timestamp and consumer identity;
- Record response times and error rates;
- Generate dataset quality metrics and reports (performed by the Data Scientist);
- Provide real-time usage dashboards;
- Generate periodic API consumption reports;
- Maintain audit logs in tamper-resistant storage;
- Allow export of usage logs for compliance and reporting purposes.

All programmatic access events, including sandbox-initiated calls, shall be logged via the Gateway.

#### **D.6.6 Architectural Decoupling and Isolation**

The Vendor shall ensure that:

- The API Gateway is logically and physically separated from internal data storage;
- Internal service endpoints are not externally discoverable;
- No direct database access is permitted from external networks;
- Internal microservices topology is abstracted from consumers;
- All programmatic access paths (including Sandbox consumption) are routed exclusively through the Gateway layer.

#### **D.7 Sandbox Environment Data Consumption**

The Vendor shall configure the Sandbox environment to enable technical users to:

- Discover available APIs;
- Access API documentation;
- Authenticate using issued credentials;
- Execute API calls;
- Retrieve structured data;
- Integrate data into applications;
- Test application logic;
- Import approved AI/ML models;
- Invoke model inference APIs.

Sandbox API access shall:

- Route through the API Gateway;
- Respect authentication and rate limits;
- Be logged for audit purposes.

#### **D.8 End-to-End Traceability**

The Vendor shall ensure that:

- Dataset publication events are logged;
- API exposure is logged;
- API access is logged;
- Sandbox consumption is logged;
- All access logs are timestamped and auditable.

No dataset shall be exposed programmatically without:

- Approved metadata;
- Completed publication workflow;
- Configured API access controls.

### **D.9 Security Requirements**

The Vendor shall ensure:

- All API traffic uses encrypted protocols;
- Credentials are securely stored;
- Access tokens are revocable;
- API keys are rotatable;
- Audit logs are tamper-resistant;
- Public endpoints do not expose internal system details.

### **D.10 Performance and Availability**

The Vendor shall ensure:

- API response time thresholds are defined;
- High availability configuration for API layer;
- Horizontal scalability;
- Failover mechanisms;
- Graceful degradation under load.

Performance metrics shall form part of system acceptance criteria.

### **D.11 Lifecycle and Change Management**

The Vendor shall ensure:

- API versioning mechanisms exist;
- Deprecation policy for outdated endpoints;
- Backward compatibility where feasible;
- Documentation updates upon API changes;
- Controlled rollout of API modifications.

### **D.12 Foundational Principle**

The Vendor shall ensure that:

- Web access, API access, and Sandbox access are fully integrated;
- Governance controls are not bypassed at any layer;
- Architecture is modular and scalable;
- Access control is enforced consistently;
- Data exposure is secure, auditable, and policy-aligned.

## 2.1.10 Metadata Standards, and Advanced Data Discoverability

### 2.1.10.1 Standards-Based Metadata and Interoperability Framework

The Open Data Portal Ecosystem shall adopt a **standards-based approach to metadata and interoperability** to ensure discoverability, reuse, and integration with national and international data ecosystems.

The solution shall support **internationally recognized metadata standards, or equivalent**, as applicable to different dataset types, including but not limited to:

- **Dataset and catalog-level metadata standards** as defined in the **National Data Governance Policy & Standards**, including but not limited to internationally recognized catalog metadata frameworks such as **DCAT, DCAT-AP, Dublin Core (DCMI), or equivalent standards** for describing datasets, distributions, publishers, licensing terms, update frequency, provenance, and access mechanisms. The system shall support structured metadata fields consistent with the national metadata schema and enable interoperability with other national and international data portals.
- **Statistical and microdata documentation standards** in accordance with the **National Data Governance Policy & Standards**, including internationally recognized frameworks such as **DDI Codebook, DDI Lifecycle, or equivalent standards**, for datasets containing surveys, census data, administrative microdata, or other structured statistical datasets. These standards shall support variable-level documentation, survey methodology descriptions, classification codes, and other metadata required for proper interpretation and reuse of microdata.
- **Geospatial metadata standards** as required under the **National Data Governance Policy & Standards** and any applicable national spatial data infrastructure frameworks, including internationally recognized standards such as **ISO 19115, ISO 19139, INSPIRE metadata profile, or equivalent standards**, for datasets containing spatial or location-based information. The system shall support metadata elements describing spatial extent, coordinate reference systems, geospatial services, and dataset lineage.
- **Machine-readable metadata and interoperability standards** consistent with the **National Data Governance Policy & Standards**, including formats such as **RDF, JSON-LD, XML, or equivalent structured metadata representations**, enabling automated metadata exchange, cross-platform discoverability, and integration with other government or international data catalogs.
- **Standardized data licensing and rights metadata** shall be supported in accordance with the **National Data Governance Policy & Standards**, including the use of **machine-readable license identifiers and metadata frameworks such as SPDX (Software Package Data Exchange) or equivalent licensing vocabularies**, enabling clear identification of dataset usage rights, reuse permissions, and attribution requirements.
- **Controlled vocabularies, classifications, and domain taxonomies** defined under the **National Data Governance Policy & Standards** or other relevant national frameworks shall be supported to ensure consistent tagging, discoverability, and harmonized interpretation of datasets across publishing entities.

The application of these standards shall be **context-sensitive and progressive**, taking into account dataset type, metadata maturity, legal constraints, and readiness of source

institutions. The solution shall **not assume uniform or immediate compliance** across all datasets at inception.

#### 2.1.10.2 Progressive Standards Adoption and Metadata Maturity

The Purchaser recognizes that metadata quality and completeness will vary across participating entities at the outset of the project.

Accordingly:

- Metadata standards shall be applied **incrementally**, prioritizing high-value and high-demand datasets;
- The vendor-provided Data Curation and Data Management Function shall guide metadata harmonization and enrichment over time; and
- Datasets at different metadata maturity levels shall be supported concurrently within the platform.

Standards adoption shall therefore be treated as an **evolutionary process**, rather than a one-time compliance exercise.

#### 2.1.10.3 Reuse of Existing Platforms

To reduce delivery risk, avoid unnecessary duplication of effort, and promote long-term sustainability, Vendors proposing purpose-built or proprietary solutions are equally welcome, provided they demonstrate fitness for purpose, interoperability, and alignment with the RFP.

Such solutions may include, but are not limited to:

- Data catalog and portal platforms supporting data discovery, publishing, and access management;
- Browser-based or web-accessible development environments supporting isolated and reproducible workspaces;
- API management and gateway capabilities supporting secure, standards-based API exposure, governance, and lifecycle management;
- AI/ML model registry and lifecycle management capabilities supporting versioning, reproducibility, and governance of analytical models;
- Data integration and data pipeline frameworks supporting scalable ingestion, transformation, and orchestration of data workflows;
- Metadata management and ingestion capabilities aligned with internationally recognized standards (e.g., DCAT, Dublin Core, or equivalent); and
- Other tools or frameworks supporting standards-based metadata management, interoperability, data exchange, and data publication.

Vendors may propose such solutions as:

- Core building blocks of the overall solution architecture;
  - Components within a hybrid architecture combining different technology approaches;
- or

- Existing platforms, frameworks, or reference implementations adapted and extended to meet the requirements of this project.

The RFP does not mandate the use of any specific product, platform, or technology. Vendors shall justify their proposed technology stack based on fitness for purpose, interoperability, scalability, maintainability, extensibility, sustainability, and alignment with the standards framework defined in this section.

#### **2.1.10.4 Advanced Data Discoverability and AI-Augmented Access**

The Open Data Portal Ecosystem shall support **advanced data discoverability mechanisms** beyond traditional keyword-based search, particularly as dataset volume and diversity increase.

Accordingly, the solution shall be designed to enable:

- Semantic and metadata-driven search capabilities;
- Contextual discovery of related datasets, variables, and indicators; and
- Future integration of **AI- or LLM-assisted discovery approaches**, where such technologies can enhance user understanding and navigation of available data.

AI-augmented discoverability shall be treated as an **augmentation layer built upon high-quality, standards-compliant metadata**, rather than as a replacement for metadata governance or curation.

The RFP does not prescribe specific AI models, protocols, or vendors. The solution shall remain **tool-agnostic and extensible**, allowing such capabilities to evolve over time.

**Note to Proposers:** The success of the platform will be measured by the consumption and reuse of datasets. Therefore, the Proposer's methodology for stakeholder engagement, user needs assessment, and demand-driven prioritization of datasets shall be a key factor in the evaluation of the Preliminary Project Plan.

#### **2.1.10.5 Alignment with Demand-Driven Prioritization and Governance**

Standards adoption and advanced discoverability features shall be aligned with:

- Demand-driven dataset prioritization;
- Policy guidance, including the MoITT Data Governance Policy upon notification; and
- The phased implementation and operationalization model defined in this RFP.

The objective of this approach is to ensure that the Open Data Portal Ecosystem evolves as a **relevant, interoperable, and reusable national data asset**, rather than as a static repository of underutilized datasets. The system's success and acceptance will be measured by the consumption of datasets, and therefore, the vendor's/ supplier's methodology for user engagement and demand-driven onboarding will be a key evaluation factor.

#### **2.1.10.6 Guiding Principle**

For the avoidance of doubt, the Purchaser emphasizes that:

**Standards, reuse, and advanced discovery mechanisms are enablers of interoperability and public value, not ends in themselves.**

Vendors shall therefore design solutions that balance rigor with practicality, innovation with sustainability, and global best practices with national context.

## E. TECHNOLOGY SPECIFICATIONS – SUPPLY & INSTALL ITEMS

### 3.0 Hosting Requirements for NODE Solution (All Components)

#### 3.0.1 General Hosting Principles

1. The entire **NODE solution**, comprising **Open Data Portal, Data Extraction Transformation & Standardisation (ETL) Layer, API Gateway, AI/ML Repository & Model Lifecycle Management, and Sandbox Environment**, shall be **deployed, hosted, and operated on a cloud-native infrastructure**.
2. The Supplier shall **propose, provision, configure, and operate** the complete hosting infrastructure required for NODE, including:
  - Compute, storage, and networking resources
  - Security, monitoring, logging, and backup services
  - High availability and disaster recovery mechanisms
3. All hosting arrangements **must strictly comply with Pakistan’s Cloud First Policy**, including but not limited to:
  - Preference for Government Cloud (GovCloud) or approved local/regional cloud providers
  - Data residency, sovereignty, and jurisdictional requirements
  - Security classification and regulatory compliance applicable to government data
4. **All hosting and infrastructure costs shall be explicitly included in the Financial Proposal as a separate line item**, clearly distinguished from:
  - Application development and customization costs
  - Software licensing costs
  - SLA and operational support costs
5. The proposed hosting architecture and costing **must cover the full contractual duration**, namely:
  - Covering Deliverables 1 through 5 (design finalization, staging, security audit, and production go-live)
  - Covering Deliverable 6 (post go-live operations and SLA period)

#### 3.0.2 Mandatory Hosting Environments

The Supplier shall design, deploy, and operate the following **logically and physically segregated environments**:

| Environment                      | Purpose                                                           | Mandatory Characteristics   |
|----------------------------------|-------------------------------------------------------------------|-----------------------------|
| <b>Development</b>               | Configuration, integration, and controlled development activities | Isolated, non-production    |
| <b>Staging (Production-like)</b> | UAT, security testing, performance benchmarking                   | Mirrors production topology |

|                   |                 |                                  |
|-------------------|-----------------|----------------------------------|
| <b>Production</b> | Live operations | Highly available, fault-tolerant |
|-------------------|-----------------|----------------------------------|

Environment isolation shall be enforced using **network segmentation, IAM boundaries, encryption domains, and access control policies**.

Each environment shall be **explicitly sized and costed** as part of the hosting proposal.

### 3.0.3 Component-Wise Hosting Requirements

#### A. National Open Data Portal

1. The Open Data Portal shall be hosted on **high-availability, horizontally scalable infrastructure**, employing:
  - Load-balanced application tiers
  - Stateless service design
  - Auto-scaling groups or equivalent mechanisms
2. The hosting architecture shall include:
  - Object storage for datasets
  - Managed relational and/or NoSQL databases for metadata
  - In-memory caching layers for performance optimization
  - Content delivery mechanisms for large dataset distribution
3. Capacity planning shall consider **dataset growth, concurrent users, and peak download traffic**, with headroom for future expansion.

#### B. Data Extraction, Transformation & Standardisation (ETL) Layer

1. The ETL layer shall be hosted on **elastic compute infrastructure** capable of supporting:
  - Batch, near-real-time, and event-driven data ingestion
  - Schema mapping, transformation, validation, and lineage tracking
  - Parallel execution and workload isolation
2. The hosting environment shall support:
  - Secure connectivity (VPN / private endpoints) to external and legacy systems
  - Workflow orchestration and job scheduling
  - Fault tolerance and retry mechanisms
3. ETL compute, storage, and network consumption **must be transparently reflected** in the hosting cost model.

#### C. API Gateway Layer

1. The API Gateway shall be hosted as a **highly available, internet-facing managed service or equivalent**, supporting:
  - TLS termination and certificate management
  - Authentication, authorization, and token validation
  - Rate limiting, throttling, and traffic shaping
  - Centralized logging and observability
2. The hosting design shall meet or exceed **99.5% annual availability** and support horizontal scalability independent of backend services.

#### D. Sandbox Environment

1. The Developer Environment shall be hosted on **container orchestration infrastructure** (e.g., Kubernetes or equivalent), supporting:
  - Isolated, policy-controlled development workloads
  - Secure access to APIs, datasets, and testing tools
  - Automated provisioning and teardown of environments
2. Resource allocation (CPU, memory, storage) shall be **quota-controlled and enforced** at platform level and reflected in the hosting cost estimates.

#### E. AI/ML Repository & Model Lifecycle Management

1. The AI/ML repository shall be hosted on infrastructure supporting:
  - Secure storage of models, artifacts, and metadata
  - Version control and lifecycle management
  - Training, validation, and inference workflows (where applicable)
2. The hosting proposal shall specify:
  - CPU/GPU acceleration options (if required)
  - Storage growth assumptions
  - Isolation between experimentation and production models

#### 3.0.4 Security, Compliance & Regulatory Alignment

1. The hosting environment shall comply with **local and international security standards**, including but not limited to:
  - ISO/IEC 27001 (Information Security Management)
  - ISO/IEC 27017 & 27018 (Cloud Security & Privacy)
  - OWASP Top 10 security controls
  - NIST Cybersecurity Framework
  - Applicable Pakistan government Cybersecurity and data protection regulations
2. Mandatory security controls shall include:
  - Encryption at rest and in transit (AES-256, TLS 1.2+)
  - Identity and Access Management (IAM) with least-privilege enforcement
  - Secure key management (HSM / KMS)
  - Centralized security logging and SIEM integration
3. The hosting environment **must support independent security audits, penetration testing, vulnerability scanning, and remediation**, in line with Deliverable 4.

#### 3.0.5 Availability, Resilience & Disaster Recovery

1. The hosting architecture shall follow **internationally recognized best practices**, including:
  - Multi-Availability Zone or equivalent deployment
  - Elimination of single points of failure
  - Automated health checks and failover mechanisms
2. Disaster Recovery (DR) design shall include:

- Clearly defined **Recovery Time Objective (RTO)** and **Recovery Point Objective (RPO)**
  - Regular, automated backups with off-site replication
  - Periodic DR drills and restoration testing
3. High availability and DR capabilities **must be fully costed** and included in the hosting line item.

### 3.0.6 Hosting Costing & Financial Proposal Binding

1. The Financial Proposal shall include a **separate and clearly labelled line item: “Hosting & Infrastructure Costs – NODE (Cloud-First Compliant)”**
2. This line item shall cover hosting costs for:
  - All NODE components
  - All environments
3. Hosting costs shall be:
  - Transparent and justifiable
  - Aligned with proposed architecture and scalability assumptions
  - Binding for the contractual period, subject to SLA terms

## 3.1 Standard Software Specifications

### 3.1.1 System Software and System-Management Utilities

The Supplier shall ensure that the entire Open Data Platform ecosystem, including the National Open Data Portal, Developer Sandbox, Data Transformation Layer, Ai/ML Analytical Model Library and API Gateway, operates on stable, secure, and widely supported system environments.

#### 3.1.1.1 Processing Unit Type 1 (Application / Web Layer)

- The system software shall support a **multi-user, web-based environment** accessible through all major, modern browsers (e.g., Chrome, Firefox, Safari, Edge) with multilinguistic support specially supporting English & Urdu languages.
- The Supplier shall provide **administrative utilities** for system health monitoring, log management, backup, and recovery operations.
- The environment shall support **secure access control, data encryption**, and **automated performance monitoring** to maintain service reliability and integrity.

#### 3.1.1.2 Processing Unit Type 2 (Data Processing and Integration Layer)

- The software environment shall support and provide **automated data ingestion, validation, transformation, and publishing** processes consistent with the data publication and interoperability requirements defined in this RFP.
- It shall allow integration with multiple data sources using **standard communication protocols and open data exchange formats** (e.g., CSV, JSON, XML).
- The Supplier shall ensure system management utilities provide tools for **pipeline monitoring, error handling**, and **quality assurance** across all data flows.

### 3.1.2 Networking and Communications Software

- All components of the Information System shall operate over standard, secure internet communication protocols (HTTP/HTTPS, TLS/SSL).

- The solution shall support secure browser-based access for public users and role-based authenticated access for administrators and data publishers.
- The system shall ensure interoperability and accessibility from diverse network environments and devices (desktop, tablet, mobile).
- The Supplier shall implement network-level monitoring and failover configurations to ensure continuous availability and security.

### **3.1.3 General-Purpose Software**

- The Supplier shall ensure that all general-purpose software used for documentation, reporting, and collaboration is compatible with widely adopted document and data exchange standards (e.g., OOXML, ODF, PDF, or equivalent).
- Administrative interfaces shall include intuitive dashboards for monitoring platform activity, dataset growth, and user engagement.
- All administrative, user, and management interfaces must comply with Web Content Accessibility Guidelines (WCAG) 2.1 Level AA to ensure usability for all stakeholders.

### **3.1.4 Database Software and Development Tools**

- The underlying data management environment shall support widely adopted, standards-based database technologies to ensure scalability, security, and interoperability.
- The Supplier shall ensure that data storage and access mechanisms allow for structured and unstructured data to be efficiently managed, queried, and retrieved.
- The platform must support metadata cataloging and indexing based on international **globally recognised** standards.
- Development environments shall support API-driven integration with the National Open Data Portal , Ai/ML Analytical Model Library and Developer Sandbox for seamless data and service exchange.

### **3.1.5 Business Application Software**

- All end-user applications (including the National Open Data Portal, Ai/ML Analytical Model Library and Developer Sandbox interfaces) shall be web-based and fully responsive, ensuring optimal performance on desktop and mobile browsers.
- The applications shall feature multilingual support (English and Urdu as a minimum).
- The Supplier shall ensure that the user interface is consistent, intuitive, and compliant with digital accessibility and usability standards.
- Administrative modules shall include customizable workflows, user management, and comprehensive reporting features to support governance and monitoring of the platform’s operation.

## **F. TESTING AND QUALITY ASSURANCE REQUIREMENTS**

### **4.1 Inspections**

#### **4.1.1 Factory Inspections**

Not applicable. The Information System is a cloud-based software solution comprising configurable platforms and web applications. No hardware or manufactured equipment is produced; therefore, no factory inspections are required.

#### **4.1.2 Inspections Following Delivery**

Upon delivery of the software components, configuration files, deployment scripts, and documentation, the Purchaser (or its designated Technical Evaluator) will carry out a formal inspection to confirm:

- Completeness of delivered custom-developed source code, container images, Infrastructure-as-Code (IaC) scripts, and configuration files;
- Availability and correct provisioning of all required cloud-hosting resources and development, testing, staging, and production environments, fully compliant with the Pakistan First Cloud Policy;
- Compliance of the deployed system architecture with the Purchaser-approved System Design Document (Deliverable 2);
- Delivery and accessibility of all associated documentation, including installation guides, system administration manuals, test plans, test scripts, configuration manuals, and API documentation;
- Completeness and validity of all software licenses, license declarations, and third-party component manifests; and
- Successful deployment verification confirming all components are reachable, health checks pass, and baseline services are operational.

Successful inspection and written approval by the Purchaser shall be a mandatory prerequisite for initiating Pre-commissioning Tests. Any deficiencies identified during inspection shall be formally recorded and communicated to the Supplier. The Supplier shall remedy all deficiencies within a timeframe agreed in writing with the Purchaser before re-inspection is conducted.

### **4.2 Quality Assurance and Testing Framework**

#### **4.2.1 General Requirements**

The Supplier shall establish, operate, and maintain a comprehensive, documented Quality Assurance (QA) and Testing Framework throughout all phases of design, development, integration, and deployment of the National Open Data Ecosystem (NODE).

The Supplier shall submit a **Master Test Plan (MTP)** as part of Deliverable 1 (Project Foundation Pack). The MTP shall be subject to Purchaser review and written approval prior to commencement of any testing activity. The MTP shall cover:

- Testing strategy, objectives, and scope across all subsystems and phases;
- Types of testing to be conducted and their sequencing;
- Test environment specifications, data management procedures, and tooling;
- Roles and responsibilities for test execution and sign-off;
- Defect management process, including severity classification, reporting, and resolution timelines;
- Entry and exit criteria for each testing phase;
- Acceptance criteria mapped to each functional and non-functional requirement; and
- Traceability from each test case to its corresponding requirement in the Requirements Traceability Matrix (RTM).

The Supplier shall maintain a **live Test Management Repository** accessible to the Purchaser and its designated Technical Evaluator at all times during testing, containing all test cases, test scripts, test execution records, defect logs, and test reports.

#### 4.2.2 Testing Environments

The Supplier shall provision and maintain the following minimum testing environments, each logically and physically separated from one another:

- **Development Environment:** Used by the Supplier for unit and component-level testing during development sprints;
- **Integration / System Testing Environment:** A stable environment for integration, system, regression, and security testing, configured identically to the production environment;
- **Staging / Pre-Production / UAT Environment:** A production-equivalent environment used for User Acceptance Testing (UAT), performance testing, and Operational Acceptance Tests. This environment shall be sized at a minimum of 50% of the production resource allocation; and
- **Production Environment:** Live environment activated only upon successful completion of all required testing phases and formal Purchaser acceptance.

All test environments shall use anonymized or synthetic datasets. No live citizen or sensitive government data shall be used in non-production environments without the written authorization of the Purchaser.

#### 4.2.3 Defect Classification and Resolution Timelines

All defects identified during any testing phase shall be logged in the Supplier's defect tracking system, which shall be accessible to the Purchaser. Defects shall be classified and resolved in accordance with the following mandatory severity framework:

| Severity Level       | Definition                                                                                                                           | Resolution Deadline                            |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| <b>Critical (P1)</b> | System crash, complete feature unavailability, data loss, security breach, or failure of a core business function with no workaround | Within 24 hours of logging                     |
| <b>High (P2)</b>     | Major functional failure with no acceptable workaround; significant deviation from an approved requirement                           | Within 3 business days                         |
| <b>Medium (P3)</b>   | Functional deviation where an acceptable workaround exists; non-critical feature malfunctions                                        | Within 7 business days                         |
| <b>Low (P4)</b>      | Cosmetic issues, minor UI inconsistencies, documentation errors with no functional impact                                            | Within 15 business days or by mutual agreement |

No testing phase may be formally closed with any unresolved Critical (P1) or High (P2) defects. The Purchaser reserves the right to halt progression to the next testing phase if outstanding defects are deemed to pose a risk to system integrity, data security, or operational continuity.

#### 4.2.4 Independent Quality Verification

The Purchaser reserves the right to engage an Independent Verification and Validation (IV&V) agent or Technical Evaluator to observe, audit, and independently verify any or all testing activities at any stage of the project. The Supplier shall extend full cooperation to any such party, including access to test environments, test documentation, defect logs, custom-developed source code repositories, and deployment configurations. All costs associated with the Purchaser's IV&V activities shall be borne by the Purchaser.

### 4.3 Pre-Commissioning Tests

Prior to issuance of the Installation Certificate, the Supplier — assisted by the Purchaser — shall conduct comprehensive Pre-commissioning Tests on each subsystem to verify readiness for User Acceptance Testing and operational deployment.

#### 4.3.1 Unit and Component Testing

The Supplier shall conduct unit and component-level testing throughout the development lifecycle, prior to integration. Unit testing shall be automated wherever technically feasible and shall achieve a minimum code coverage of **80%** across all custom-developed code modules.

The Supplier shall produce and submit **Unit Test Reports** at the end of each Agile sprint, summarizing tests executed, coverage achieved, defects identified, and resolutions applied. These reports shall form part of the evidence package for Deliverable 3.

### 4.3.2 Integration Testing

The Supplier shall conduct structured integration testing to verify correct and reliable interaction between all NODE components. Integration testing shall cover, at a minimum:

- ETL Layer to National Open Data Portal data store and metadata catalog;
- National Open Data Portal to API Gateway for all programmatic access endpoints;
- API Gateway to Developer Sandbox for authenticated data and API access;
- AI/ML Analytical Model Library to API Gateway and Developer Sandbox;
- Integration with the National Data Exchange Layer (NDEL) for all four defined data exchange modes (Push, Scheduled Pull, Real-Time API Federation, and Event-Driven Sync);
- Identity and Access Management (IAM) system integration across all components, including MFA and SSO enforcement; and
- Monitoring, logging, and alerting pipelines across all subsystems.

Integration test results shall be documented in an **Integration Test Report** and submitted to the Purchaser for review prior to commencement of System Testing.

### 4.3.3 System Testing

The Supplier shall conduct end-to-end System Testing across all integrated subsystems to validate compliance with all functional, technical, and non-functional requirements defined in Section VII. System Testing shall include, at a minimum:

- Execution of all functional test cases mapped to requirements in the RTM;
- Verification of all defined user roles, access permissions, and workflow controls;
- Validation of data ingestion, transformation, publication, and API consumption workflows end-to-end;
- Verification of all administrative functions including RBAC management, audit logging, publisher scorecards, and data freshness monitoring;
- Confirmation of multilingual interface functionality; and
- Accessibility compliance verification against WCAG 2.1 Level AA for all public and administrative interfaces.

All test cases executed during System Testing shall be traceable to specific requirements in the RTM. The Supplier shall produce a **System Test Report** documenting all test cases, execution outcomes, defects identified, and resolutions confirmed.

### 4.3.4 Regression Testing

The Supplier shall conduct structured regression testing following the resolution of any defect or the application of any system change, patch, or update during any phase of development or deployment. Regression testing shall be automated to the maximum extent practicable using the Supplier's continuous integration and continuous delivery (CI/CD) pipeline. Regression

test suites shall be maintained and updated throughout the project lifecycle and handed over to the Purchaser as part of the knowledge transfer activities under Deliverable 6.

#### 4.3.5 Security Testing

The Supplier shall conduct comprehensive security testing across all components of NODE, covering the following mandatory test categories:

##### A. Vulnerability Assessment and Penetration Testing (VAPT)

The Supplier shall commission a formal Vulnerability Assessment and Penetration Testing (VAPT) exercise prior to the commencement of UAT. The VAPT shall be conducted by a qualified, independent security testing entity acceptable to the Purchaser, and shall cover:

- All public-facing web interfaces and administrative portals;
- All API endpoints exposed through the API Gateway;
- The Developer Sandbox environment and its resource isolation mechanisms;
- Authentication and authorization mechanisms including MFA, SSO, and token management;
- Network architecture and inter-component communication channels;
- Cloud infrastructure configuration and hardening;
- Container and microservices runtime security; and
- Data-at-rest and data-in-transit encryption implementation.

The VAPT shall produce a formal **Security Assessment Report** classifying all identified vulnerabilities by CVSS score and recommended remediation actions. All Critical (CVSS  $\geq 9.0$ ) and High (CVSS 7.0–8.9) vulnerabilities shall be fully remediated and re-tested before the Purchaser will permit commencement of UAT. The Security Assessment Report and evidence of remediation shall be submitted to the Purchaser.

##### B. Web Application Security Testing

Security testing shall verify compliance with the OWASP Top 10 web application security risks, covering at minimum:

- SQL and command injection vulnerabilities;
- Cross-Site Scripting (XSS) and Cross-Site Request Forgery (CSRF);
- Broken authentication and session management;
- Insecure direct object references and access control failures;
- Security misconfiguration in all application and infrastructure components;
- Insecure deserialization; and
- Insufficient logging and monitoring.

### **C. API Security Testing**

All API endpoints shall be tested for security vulnerabilities including unauthorized access, parameter tampering, excessive data exposure, improper rate limiting, and injection attacks.

### **D. Compliance Verification**

Security testing shall include verification of compliance with applicable requirements, including Pakistan Security Standards (PSS), NIST Cybersecurity Framework controls, and ISO/IEC 27001 control objectives as specified in Section 1.7.3 of these Requirements.

A repeat VAPT exercise shall be conducted within thirty (30) days prior to the Go-Live date to confirm that no new vulnerabilities have been introduced during final deployment and configuration activities.

### **4.3.6 Performance and Load Testing**

The Supplier shall conduct performance testing to verify that the system meets all response time, throughput, and scalability requirements defined in Section 1.11 of these Requirements. Performance testing shall be conducted against the Year 3 target workload parameters and shall include:

#### **A. Load Testing**

Simulate concurrent user loads up to the Year 3 Normal Operations target (500–750 concurrent web users) and verify that all response time SLAs are maintained:

- Standard web interaction (search, metadata retrieval, catalog browsing, dataset preview): < 2 seconds;
- API metadata queries: ≤ 500 milliseconds;
- API dataset queries: ≤ 1 second; and
- Download initiation: commences within 3 seconds for files up to 500 MB.

#### **B. Stress Testing**

Simulate user loads up to 3× the Year 3 Normal Operations concurrent load (i.e., 1,500–2,250 concurrent web users) to verify system behavior under peak or emergency demand conditions. The system shall degrade gracefully under stress without data loss, corruption, or security failures.

#### **C. API Throughput Testing**

Verify that the API Gateway sustains a minimum throughput of 150–250 requests per second under Year 3 target load conditions without breach of rate limits or service degradation.

## D. ETL Pipeline Performance Testing

Verify that the ETL layer processes a minimum of 40–60 simultaneous pipeline runs (representing 40–60 data source agencies) within performance parameters and without pipeline failures or data integrity violations.

## E. Failover and Recovery Testing

Simulate failure of individual components and availability zones to verify:

- Automated failover occurs within the 5-minute maximum disruption threshold;
- Recovery Time Objective (RTO) of  $\leq 4$  hours is achievable following a declared disaster scenario; and
- Recovery Point Objective (RPO) of  $\leq 15$  minutes is met through backup and replication mechanisms.

## F. Backup and Restore Testing

Verify that daily incremental and weekly full backups execute successfully, are stored securely in an off-site or geographically redundant location, and can be successfully restored within the RTO and RPO thresholds.

The Supplier shall produce a **Performance Test Report** documenting test scenarios, simulated load profiles, results against each SLA benchmark, identified bottlenecks, and confirmed resolutions.

### 4.3.7 Subsystem-Specific Pre-Commissioning Verification

In addition to the cross-cutting test types above, the Supplier shall verify the following subsystem-specific requirements during Pre-commissioning:

#### Subsystem 1 — National Open Data Portal (Data Management System)

Tests will confirm:

- All mandatory and secondary functional requirements defined in the BRD are implemented and traceable in the RTM;
- Dataset ingestion (manual upload, API-based harvesting, and ETL-injected) and metadata validation operate correctly across all supported formats;
- Faceted and spatial search, map-based bounding box search, visualization tools, and download functions operate without errors;
- Automated freshness monitoring, stale dataset flagging, and escalation notifications fire correctly at the defined thresholds (80%, 100%, 150%, and 200% of declared refresh window);
- Publisher scorecards display correctly and reflect accurate compliance data;

- Administrative controls including RBAC, multi-tier organizational hierarchy, publishing workflows, harvest source management, and audit logging perform as specified; and
- WCAG 2.1 Level AA accessibility compliance is verified through automated and manual testing.

### **Subsystem 2 — Developer Sandbox**

Tests will confirm:

- Browser-based IDEs launch correctly within isolated, containerized, and resource-quota-enforced workspaces;
- Pre-configured workspace stacks load with all specified programming languages, frameworks, and data science libraries;
- Integration with the National Open Data Portal APIs and the API Gateway is functional and authenticated;
- MFA and SSO enforcement is operational for all Sandbox access;
- Workspace snapshotting, URL-based sharing, and collaborative access features work reliably; and
- Resource quotas (CPU, memory, storage) are enforced per user and per workspace.

### **Subsystem 3 — Data Extraction, Standardization and Transformation Layer**

Tests will confirm:

- Successful extraction from all defined source types including REST APIs, relational databases, SFTP, flat files, XML, and JSON feeds;
- Correct application of data validation, cleansing, schema mapping, normalization, and transformation rules;
- Automated metadata enrichment and provenance tracking are applied consistently;
- Pipeline scheduling, orchestration, error handling, and alerting mechanisms function correctly;
- Seamless and validated injection of standardized data and metadata into the National Open Data Portal datastore and catalog; and
- All four NDEL integration modes (Push, Scheduled Pull, Real-Time API Federation, Event-Driven Sync) are functional where applicable.

### **Subsystem 4 — API Gateway**

Tests will confirm:

- Secure routing, versioning, and dynamic load balancing of API calls to all backend services;
- Correct enforcement of authentication (API keys, OAuth 2.0, OpenID Connect), authorization, rate limiting, throttling, and quota policies;

- WAF rules are active and block test payloads simulating OWASP Top 10 attack vectors;
- Real-time monitoring dashboards, traffic analytics, and access logging are operational; and
- Developer portal is accessible, API documentation is complete and interactive, and API key self-service issuance is functional.

### Subsystem 5 — AI/ML Analytical Model Library

Tests will confirm:

- The Library is fully deployed and accessible through its secure administrative and API interfaces;
- Model registration, metadata documentation, versioning, approval workflows, and deprecation processes perform as specified;
- Pre-configured baseline models are catalogued, discoverable, and executable via API within the Developer Sandbox;
- User-submitted models can be validated, stored, and made discoverable without compromising system integrity;
- Model metadata (type, version, source dataset references, performance metrics, ethical considerations) is accurately recorded and retrievable;
- All model-related APIs (registration, metadata retrieval, download, execution) are operational, documented, and secured through the API Gateway;
- Audit logging captures complete lineage for all model submissions, approvals, downloads, and updates; and
- Access control and authorization policies for administrators and authorized innovators function correctly.

### Success Criteria for Pre-commissioning:

All subsystems must meet all functional, technical, security, and performance benchmarks specified in these Requirements and the approved Master Test Plan. All Critical (P1) and High (P2) defects must be resolved and verified closed. Only upon written confirmation by the Purchaser that all Pre-commissioning Tests have been successfully completed will the Purchaser issue the **Installation Certificate**, permitting commencement of User Acceptance Testing.

## 4.4 User Acceptance Testing (UAT)

### 4.4.1 UAT Organization and Responsibility

User Acceptance Testing shall be conducted by the Purchaser (PIU/DEEP), with the technical support and active participation of the Supplier. The Purchaser shall designate a UAT Coordinator responsible for organizing and overseeing all UAT activities.

The Supplier shall be responsible for:

- Providing and maintaining the UAT environment in a stable, production-equivalent state for the entire duration of UAT;
- Providing the Purchaser with all UAT test scripts, test data, user guides, and training necessary to conduct testing;
- Assigning dedicated technical personnel to provide real-time support during UAT execution;
- Logging, triaging, and resolving all defects raised by the Purchaser's UAT team within the timelines specified in Section 4.2.3; and
- Re-testing all resolved defects and providing evidence of resolution to the Purchaser.

#### **4.4.2 UAT Scope and Approach**

UAT shall validate that the integrated NODE platform meets the Purchaser's business and operational requirements as defined in the BRD and these Technical Requirements, from the perspective of the end user and system administrator.

UAT shall cover all five subsystems and shall include, at minimum:

- Execution of all Purchaser-defined business scenario test cases covering end-to-end workflows;
- Validation of the administrative user interface and all data publisher workflows;
- Validation of the public user interface including search, discovery, download, and API access;
- Verification of the data freshness monitoring and escalation system under simulated stale-data conditions;
- Validation of the Developer Sandbox with representative developer user scenarios;
- Verification of all RBAC roles, access policies, and organizational hierarchy management; and
- Validation of the AI/ML Model Library from the perspectives of model submitter, reviewer, and consumer.

#### **4.4.3 UAT Entry Criteria**

UAT shall not commence until all of the following conditions are satisfied and confirmed in writing by the Purchaser:

- The Installation Certificate has been formally issued;
- The UAT environment is confirmed stable and production-equivalent;
- All Pre-commissioning Test defects at P1 and P2 severity have been verified closed;
- The VAPT Security Assessment Report has been submitted and all Critical and High vulnerabilities verified remediated;
- All required UAT test scripts, test data, and user documentation have been delivered by the Supplier; and
- UAT training for Purchaser personnel has been completed.

#### 4.4.4 UAT Duration and Exit Criteria

UAT shall be conducted for a minimum period of **thirty (30) business days**. UAT shall be deemed successfully completed when all of the following exit criteria are satisfied:

- A minimum of **95% of all UAT test cases** have been executed;
- **100% of Critical (P1) defects** identified during UAT have been resolved and verified closed;
- **100% of High (P2) defects** identified during UAT have been resolved and verified closed, or a formal written remediation plan with a specific timeline has been accepted in writing by the Purchaser;
- No new Critical or High defects remain open at the time of exit;
- All performance benchmarks defined in Section 1.11.4 have been verified in the UAT environment; and
- The Purchaser's UAT Coordinator has formally signed off on UAT completion.

Upon successful completion of UAT, the Supplier shall produce a **UAT Completion Report** summarizing all test cases executed, pass/fail outcomes, defects raised and their resolution status, and outstanding items. The Purchaser shall review and formally accept or reject the UAT Completion Report within ten (10) business days of submission.

### 4.5 Operational Acceptance Tests (OAT)

#### 4.5.1 Purpose and Scope

Following the formal completion of UAT and deployment of the system to the production environment, the Purchaser — assisted by the Supplier — shall perform Operational Acceptance Tests (OAT) to validate that the entire integrated NODE platform performs reliably and satisfactorily under live, real-world production conditions.

OAT shall verify:

- End-to-end operation and interoperability across all five subsystems under live production conditions;
- System stability, responsiveness, and uptime over a sustained operational trial period;
- Data integrity and synchronization across ingestion, transformation, storage, publication, and API consumption workflows;
- Correct and consistent enforcement of security policies, MFA/SSO, RBAC, and all access control mechanisms;
- Accuracy and completeness of monitoring dashboards, publisher scorecards, audit logs, and alerting mechanisms;
- Correct behavior of automated data freshness monitoring, stale dataset escalation, and NDEL-integrated data refresh workflows; and
- Accessibility (WCAG 2.1 Level AA) and multilingual functionality under production conditions.

#### 4.5.2 OAT Conditions

Operational Acceptance Testing shall be conducted in the live production environment using representative datasets sourced from participating government agencies, active user accounts established through the onboarding process, and live network conditions.

A minimum of **five (5) government agencies** shall be onboarded and publishing datasets through the portal during the OAT period, with active ETL pipelines operational for at least two (2) agencies. This threshold shall be agreed in writing between the Purchaser and Supplier prior to OAT commencement.

The Supplier shall maintain full technical support coverage, including a dedicated on-call support team, throughout the OAT period.

#### 4.5.3 OAT Duration and Monitoring

OAT shall run for a minimum continuous period of **thirty (30) calendar days** without major system failure. The Purchaser shall monitor system availability, response times, error rates, and security events throughout the OAT period using the platform's monitoring dashboards and any additional monitoring tools deployed by the Purchaser.

The Supplier shall submit weekly OAT Status Reports to the Purchaser throughout the OAT period, documenting system availability metrics, incidents encountered, resolutions applied, and cumulative performance against SLA benchmarks.

#### 4.5.4 OAT Exit Criteria and Operational Acceptance

The system shall be deemed to have achieved Operational Acceptance when all of the following conditions are satisfied:

- The platform has operated continuously for a minimum of **thirty (30) consecutive calendar days** in production without a Critical (P1) failure;
- System availability has met or exceeded **99.9%** measured over the OAT period;
- All response time benchmarks defined in Section 1.11.4 have been sustained throughout the OAT period;
- No unresolved Critical (P1) or High (P2) defects remain open;
- All security monitoring, audit logging, and alerting mechanisms have been verified operational throughout the OAT period;
- All OAT weekly status reports have been reviewed and accepted by the Purchaser; and
- The Purchaser has formally reviewed and accepted the Supplier's **Final OAT Report**, which shall document all OAT activities, metrics, incidents, and confirmations of compliance against all exit criteria.

Upon satisfaction of all exit criteria, the Purchaser shall formally issue the **Operational Acceptance Certificate (OAC)**. The OAC shall mark the commencement of the SLA services period and trigger the associated payment milestone.

Failure to achieve OAT exit criteria within the contractually specified timeframe shall entitle the Purchaser to invoke applicable liquidated damages provisions as defined in the General and Special Conditions of Contract, without prejudice to any other contractual remedies available to the Purchaser.

## G. SERVICE SPECIFICATIONS – RECURRENT COST ITEMS

### 5.1 Platform Operationalization, Stabilization, Data Ingestion, Curation and Adoption Enablement

As part of **Deliverable 6**, the Supplier shall be responsible for ensuring the **effective operationalization, stabilization, and sustained adoption of the system** following its Go-Live. This deliverable focuses on enabling real-world usage, addressing implementation gaps identified during live operations, and ensuring the platform functions reliably, securely, and efficiently under production conditions. The Supplier shall undertake all necessary corrective, adaptive, and optimization activities required to achieve full functional maturity of the system at no additional cost to the Client.

These activities shall include remediation of defects, resolution of functional and performance issues, mitigation of security vulnerabilities, configuration refinements, and implementation of minor enhancements necessary to align the system with approved requirements and operational realities. The Supplier shall also provide structured monitoring outputs and operational reports to demonstrate system stability, readiness, and adoption progress.

#### 5.1.1 Techno-Functional Enablement and Operational Facilitation

As part of **Deliverable 6**, the Supplier shall be responsible for the **end-to-end techno-functional enablement of the National Open Data Ecosystem**, extending beyond basic onboarding to include **data ingestion, integration, transformation, and operationalization across all platform layers**. The objective of this deliverable is to ensure that data from participating stakeholders is **systematically acquired, processed, governed, and made usable** across the Open Data Portal, Sandbox, API Gateway, and advanced analytics and AI/ML layers.

The Supplier’s responsibilities shall include, but not be limited to, the following:

##### a) Data Provider Enablement and Dataset Onboarding

The Supplier shall actively facilitate and technically enable **MDAs, provincial entities, regulators, SOEs, and approved private-sector organizations** to publish datasets into the National Open Data Portal ecosystem. This shall include:

- Assessment of source systems, data formats, update frequencies, and data quality of participating organizations
- Definition of onboarding pathways (manual, semi-automated, or fully automated ingestion) based on stakeholder maturity
- Mapping of source datasets to approved open-data schemas, metadata standards, and classification frameworks
- Support for dataset registration, versioning, lifecycle management, and publication workflows across production and Sandbox environments

##### b) Data Ingestion, ETL/ELT Pipeline Development, and Automation

Recognizing that a significant portion of the ecosystem relies on **system-driven data ingestion rather than manual uploads**, the Supplier shall design, develop, configure, and implement **data ingestion and transformation mechanisms**, including:

- Development of **ETL / ELT pipelines and scripts** to extract data from heterogeneous source systems (databases, files, legacy systems, APIs, event streams, and third-party platforms)
- Implementation of data validation, cleansing, normalization, enrichment, and transformation rules aligned with open-data standards
- Scheduling and orchestration of batch, near-real-time, or event-driven data ingestion processes
- Handling of incremental updates, delta loads, error handling, retries, and reconciliation mechanisms
- Documentation and handover of all ingestion pipelines, mappings, and transformation logic

#### c) Integration, Interoperability, and API Enablement

The Supplier shall provide comprehensive integration and interoperability facilitation to ensure seamless data exchange within the ecosystem, including:

- Design and implementation of **secure APIs and data services** for data ingestion, access, and downstream consumption
- Configuration and enablement of the **API Gateway**, including authentication, authorization, throttling, logging, and version management
- Establishment of standardized data-exchange mechanisms aligned with national interoperability and data-governance frameworks
- Support for both **push-based and pull-based integration models** with participating agencies
- Validation of interoperability across the National Open Data Portal, Sandbox, and external consumer systems

#### d) Sandbox Enablement and Advanced Use-Case Support

The Supplier shall operationalize the **Sandbox environment** as a functional experimentation and innovation layer by:

- Ensuring availability of curated, anonymized, or synthetic datasets suitable for testing and innovation
- Enabling controlled access for developers, startups, academia, and approved stakeholders
- Supporting rapid prototyping, API testing, and proof-of-concept development
- Ensuring isolation, governance controls, and safe experimentation without impacting production datasets

#### e) AI/ML and Advanced Analytics Data Enablement

To support future-ready use cases, the Supplier shall ensure that the ecosystem is **AI/ML-ready**, including:

- Preparation and structuring of datasets suitable for analytics, machine learning, and AI workloads
- Enablement of feature-ready data pipelines and curated datasets for training, validation, and inference
- Integration support between data repositories, analytics platforms, and AI/ML tools where applicable

- Ensuring compliance with data-governance, anonymization, and ethical-AI principles

#### **f) Proactive Ecosystem Monitoring and Optimization**

The Supplier shall continuously monitor the operational health and adoption of the data ecosystem by:

- Tracking ingestion success rates, data freshness, schema compliance, and pipeline performance
- Identifying bottlenecks, quality issues, or integration risks across stakeholders
- Proactively notifying the PIU of systemic risks or improvement opportunities
- Recommending and implementing technical, architectural, or process optimizations to enhance scalability and adoption

#### **g) Knowledge Transfer and Sustainability**

All configurations, scripts, pipelines, integration artifacts, and operational procedures developed under Deliverable 6 and all other Deliverables shall be:

- Fully documented and handed over to the DEEP/ MoITT
- Designed using maintainable, extensible, and standards-based approaches
- Structured to enable future expansion, additional data providers, and new use cases

- **Operational Issue Diagnosis and Resolution:**

Identify, analyse, and resolve onboarding-related technical issues, including but not limited to connectivity failures, schema mismatches, metadata validation errors, access-control misconfigurations, and data-exchange constraints.

- **Data Governance and Compliance Guidance:**

Support participating organizations in adopting approved data-governance practices, including data classification, anonymization, quality assurance, and regulatory compliance.

- **Capacity Enablement:**

Conduct targeted, need-based technical walkthroughs, configuration sessions, and operational guidance activities to enable effective participation by onboarding entities.

- **Proactive Operational Engagement:**

Monitor onboarding and integration pipelines, identify risks or bottlenecks, proactively notify the DEEP Team, and recommend technical or process improvements to enhance adoption efficiency.

These techno-functional activities are **integral to Deliverable 6** and are essential to ensuring the platform’s operational readiness, adoption at scale, and long-term sustainability.

#### **5.1.2 Targeted Organizational Onboarding and Phased Enablement**

As part of Deliverable 6, the Supplier shall ensure the successful techno-functional onboarding and operational enablement of **a minimum of twenty-five (25) and up to thirty (30) participating organizations** within the National Open Data Ecosystem. These organizations shall be identified and nominated by the Purchaser and may include federal Ministries, Divisions, Attached Departments, Provincial Entities, Regulators, State-Owned Enterprises (SOEs), and other approved public or private-sector data providers.

The onboarding and operational enablement of these organizations shall be carried out **in five structured phases**, each aligned with the sub-deliverables defined under **Deliverable 6 (A–**

**E)** and the associated **Payment Milestone 6**. Each phase shall represent a clearly defined operational milestone demonstrating progressive ecosystem adoption and system utilization. For each participating organization, the Supplier shall perform all necessary **technical, integration, and operational enablement activities** required to facilitate the ingestion, transformation, publication, and operational utilization of datasets within the ecosystem. These responsibilities shall include, but shall not be limited to:

- Assessment of the participating organization’s source systems, data assets, formats, and technical readiness;
- Design and implementation of data ingestion mechanisms, including manual, semi-automated, or fully automated pipelines where applicable;
- Development and configuration of ETL/ELT pipelines, data mappings, and transformation rules aligned with approved metadata standards and data-governance frameworks;
- Configuration of dataset publication workflows, version management, metadata registration, and lifecycle controls;
- Enablement of secure API-based or data-exchange integrations where required;
- Facilitation of dataset availability and usability across the Open Data Portal, API Gateway, Sandbox Environment, and analytics layers; and
- Provision of targeted technical guidance and operational support to participating organizations during onboarding and initial operational use.

The Supplier shall ensure that onboarding outcomes for each phase demonstrate **operationally usable datasets and functional data pipelines**, rather than merely administrative registration of datasets. Evidence of successful onboarding shall include operational data ingestion pipelines, validated metadata records, published datasets accessible through the portal or APIs, and demonstrable integration within the ecosystem.

The detailed **phasing, sequencing, and allocation of organizations across Deliverable 6A–6E** shall be proposed by the Supplier within the **Platform Operationalization and Adoption Plan** and shall be subject to review and approval by the Purchaser. Successful completion and acceptance of each onboarding phase shall form part of the **acceptance criteria for Deliverable 6 and the associated payment milestone**.

The Supplier shall remain fully responsible for all techno-functional activities required to achieve the above onboarding targets. Policy coordination, institutional engagement, and formal stakeholder governance shall remain the responsibility of the Purchaser; however, the Supplier shall provide all necessary technical support and operational facilitation required to enable participating organizations to successfully integrate with and utilize the National Open Data Ecosystem.

### **5.1.2 Technical Support & Operational Issue Classification and Resolution Framework**

As part of **Deliverable 6**, the Supplier shall be responsible for the **systematic identification, prioritization, and resolution of all operational issues** observed during live usage of the platform. All issues shall be categorized by severity and addressed within the resolution timelines defined below to ensure uninterrupted operational continuity and system reliability.

| <b>Severity Level</b>         | <b>Description</b>                                                                                                | <b>Acknowledgement Time</b> | <b>Resolution Time</b>                                 |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------|
| <b>Critical Issues</b>        | Complete system unavailability, authentication failures, or critical security vulnerabilities with immediate risk | Within 1 hour               | Within 12 hours                                        |
| <b>High Severity Issues</b>   | Major functional disruption, including failure of core modules, API breakdowns, or serious security weaknesses    | Within 2 hours              | Within 24 hours                                        |
| <b>Medium Severity Issues</b> | Partial functional limitations affecting subsets of users or non-critical components                              | Within 4 hours              | Within 3 business days                                 |
| <b>Low Severity Issues</b>    | Minor functional defects or cosmetic issues not materially affecting system usage                                 | Within 1 business day       | Within 7 business days or aligned with planned updates |

## 5.2 General Operational Requirements

- The Supplier shall maintain a **formal issue-tracking and resolution mechanism** through which all identified issues are logged, tracked, prioritized, and closed.
- Clearly defined **communication and escalation channels** shall be established for issue reporting and coordination with the DEEP Project team.
- All critical operational issues shall be immediately escalated to the Supplier’s designated technical leadership.
- The Supplier shall submit **weekly operational status and resolution reports** to the DEEP designated team, covering open issues, resolved items, trends, and corrective actions.
- All corrective actions and fixes shall undergo **appropriate validation and regression checks** prior to deployment to prevent recurrence or unintended impacts.
- Persistent failure to meet the defined resolution timelines or operational obligations under this Deliverable shall be treated as **non-performance against Deliverable 6**, and shall attract applicable contractual remedies in accordance with the Agreement.

**Implementation Schedule**

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**A. IMPLEMENTATION SCHEDULE TABLE**

| Line Item No. |                                                                                                                                                                                                                                                        |                                                                                                   | Configuration Table No.                                                                                               | Delivery (Proposer to specify in the Preliminary Project Plan) | Installation (weeks from Effective Date) | Acceptance (weeks from Effective Date) | Liquidated Damages Milestone |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|------------------------------------------|----------------------------------------|------------------------------|
|               | Subsystem / Item                                                                                                                                                                                                                                       |                                                                                                   |                                                                                                                       |                                                                |                                          |                                        |                              |
|               |                                                                                                                                                                                                                                                        |                                                                                                   |                                                                                                                       |                                                                |                                          |                                        |                              |
| D1            | <b>Deliverable 1 – Project Foundation Pack:</b><br>Inception Report , Business Requirements Document (BRD), Data Agencies Technical Enablement Plan, Deployment Architecture and Environment Design, Operational Readiness and Knowledge Transfer Plan |                                                                                                   | <b>Part 2, Section VII – Requirements of the Information System: 2.1 System Analysis and Detailed Solution Design</b> |                                                                | 4 weeks                                  | 1 week                                 | Please refer to GCC 28.2.    |
| D2            | <b>Deliverable 2 – Unified &amp; Component-Level System Design Document for:</b><br>National Open Data Portal, Developer Sandbox, Data Extraction, Transformation and Standardisation Layer, AI/ML Analytical Model Library , API Gateway.             |                                                                                                   | <b>PART 2, SECTION VII – REQUIREMENTS OF THE INFORMATION SYSTEM</b>                                                   |                                                                | 4 weeks                                  | 1 week                                 |                              |
| D3            | <b>Deliverable 3 – Complete Solution Development and Deployment</b>                                                                                                                                                                                    | <b>Phase 1 – Core Data Publication Platform</b><br><br>• ETL module<br>• Open Data Portal module; | <b>PART 2, SECTION VII – REQUIREMENTS OF THE INFORMATION SYSTEM</b>                                                   |                                                                | 14 weeks                                 | 2 weeks                                |                              |

|  |                                                                                                                         |                                                                                                                                                                                                                      |  |  |  |  |  |
|--|-------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|
|  | <b>of Integrated Staging Environment and Successful UAT Sign-Off:</b><br>Fully Operational system deployed for testing. | <ul style="list-style-type: none"><li>• API Gateway</li></ul> <p><b>Phase 1</b> shall be designed such that it can operate independently, without reliance on the Developer Sandbox or AI/ML Repository modules.</p> |  |  |  |  |  |
|  |                                                                                                                         | <p><b>Phase 2 – Implementation of Developer Enablement and Expanded Access</b></p> <ul style="list-style-type: none"><li>• Developer Sandbox Module</li><li>• Integration with API Gateway</li></ul>                 |  |  |  |  |  |
|  |                                                                                                                         | <p><b>Phase 3 – Implementation of Ai/ML Model Repository</b></p> <ul style="list-style-type: none"><li>• AI/ML Model Repository Module to publish fine tuned Ai/ML models; and</li></ul>                             |  |  |  |  |  |

|    |                                                                                                                                                                                                                                      |                                                                                                                                                                                                     |                                                                                                                                                                                     |  |           |        |  |
|----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------|--------|--|
|    |                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>• Fully functional Integrated system with all modules ETL layer, Open Data Portal, Sandbox , API Gateway and Ai/ ML Repository fully operational.</li> </ul> |                                                                                                                                                                                     |  |           |        |  |
| D4 | <b>Deliverable 4 – Successful Security Audit &amp; Compliance Certificate:</b> Penetration testing, vulnerability remediation, certification by third party assigned / approved by purchaser                                         |                                                                                                                                                                                                     | <b>PART 2, SECTION VII – REQUIREMENTS OF THE INFORMATION SYSTEM</b>                                                                                                                 |  | 6 weeks   | 1 week |  |
| D5 | <b>Deliverable 5 – Production Go-Live Acceptance:</b> Fully working / functional system                                                                                                                                              |                                                                                                                                                                                                     | <b>PART 2, SECTION VII – REQUIREMENTS OF THE INFORMATION SYSTEM</b>                                                                                                                 |  | 2 weeks   | 1 week |  |
| D6 | <b>Deliverable 6 – Platform Operationalization, Stabilization, Data Ingestion, Curation and Adoption Enablement:</b> which includes End-to-End Operationalization and NODE Enablement for Successful Onboarding, Data Ingestion, and | D6-A (05 Organisations)                                                                                                                                                                             | <b>PART 2, SECTION VII – REQUIREMENTS OF THE INFORMATION SYSTEM:</b><br><br><b>5.1 Platform Operationalization, Stabilization, Data Ingestion, Curation and Adoption Enablement</b> |  | 1-2 years |        |  |
|    |                                                                                                                                                                                                                                      | D6-B (05 Organisations)                                                                                                                                                                             |                                                                                                                                                                                     |  |           |        |  |
|    |                                                                                                                                                                                                                                      | D6-C (05 Organisations)                                                                                                                                                                             |                                                                                                                                                                                     |  |           |        |  |
|    |                                                                                                                                                                                                                                      | D6-D (05 Organisations)                                                                                                                                                                             |                                                                                                                                                                                     |  |           |        |  |

|  |                                                                                                                                          |                         |  |  |  |  |  |
|--|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--|--|--|--|--|
|  | Publication of all Datasets from a Minimum 25 Organizations on the NODE as divided into sub-deliverables D6-A, D6-B, D6-C, D6-D AND D6-E | D6-E (05 Organisations) |  |  |  |  |  |
|--|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|--|--|--|--|--|

**Note:** Refer to the System Inventory Table(s) for the specific items and components that constitute the Subsystems or item. Refer to the Site Table(s) below for details regarding the site and the site code.

- - indicates not applicable. “Indicates repetition of table entry above.

#### IMPORTANT NOTES:

- **Timeline:** Total period for Deliverable 1 to Deliverable 5 (D1 to D5) is 08-09 months.
- **Total time-period for** Deliverable 6 – Platform Operationalization, Stabilization, and Adoption Enablement is 01-02 years commencing after acceptance of Deliverable-05.
- **Each deliverable** is subject to the successful fulfilment of purchaser requirements linked via corresponding entries inside column “Configuration Table No” in Implementation Schedule Table mentioned above.
- **Dependencies:** Each deliverable requires DEEP’s approval before proceeding to the next.

*The solution shall be developed and implemented in a modular, phased manner. Phase 1 shall constitute a core, operational platform (ETL, Portal, Basic API). Acceptance of Phase 1 is a pre-condition for proceeding to Phases 2 and 3. This approach is a non-negotiable risk-mitigation strategy.*

*Although Deliverable 2 (Unified & Component-Level System Design Document) and Deliverable 3 (Complete Solution Development and Deployment of Integrated Staging Environment and Successful UAT Sign-Off) are defined as consolidated deliverables, their preparation, submission, and acceptance shall be conducted in phased, module-aligned increments, consistent with this Modular and Phased Implementation Strategy, as referred to in 1.9.5.2 Design and Deliverable Alignment.*

## B. SITE TABLE(S)

[illegible]

### C. TABLE OF HOLIDAYS AND OTHER NON-WORKING DAYS

| Month | 20xy                                                                                                | 20xy+1 | 20xy+2 | .... |  |  | ... | 20zz |
|-------|-----------------------------------------------------------------------------------------------------|--------|--------|------|--|--|-----|------|
| 1     | As per the Government's notified public holidays and (non)working days – amended from time to time. |        |        |      |  |  |     |      |
| 2     |                                                                                                     |        |        |      |  |  |     |      |
| 3     |                                                                                                     |        |        |      |  |  |     |      |
| 4     |                                                                                                     |        |        |      |  |  |     |      |
| 5     |                                                                                                     |        |        |      |  |  |     |      |
| 6     |                                                                                                     |        |        |      |  |  |     |      |
| 7     |                                                                                                     |        |        |      |  |  |     |      |
| 8     |                                                                                                     |        |        |      |  |  |     |      |
| 9     |                                                                                                     |        |        |      |  |  |     |      |
| 10    |                                                                                                     |        |        |      |  |  |     |      |
| 11    |                                                                                                     |        |        |      |  |  |     |      |
| 12    |                                                                                                     |        |        |      |  |  |     |      |

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### SYSTEM INVENTORY TABLE (SUPPLY AND INSTALLATION COST ITEMS)

| Component No. | Component                                                                   | Relevant Technical Specifications No.                        | Additional Site Information (e.g., building, floor, department, etc.)                                    | Quantity |
|---------------|-----------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------|
| 1.            | Subsystem 1                                                                 |                                                              |                                                                                                          | --       |
| 1.1           | All Components including Deliverable 1 – 5 (D1 – D5)                        | PART 2, SECTION VII – Requirements of the Information System | Digital Economy Enhancement Project<br>2nd Floor, TF (Telecom Foundation) Complex, Sector G-9, Islamabad | --       |
| :             |                                                                             |                                                              |                                                                                                          |          |
| 2.            | Subsystem 2                                                                 |                                                              |                                                                                                          | --       |
| 2.1           | Deliverable 6 (D6 including all the sub-sections/ component – D6-A to D6-E) | PART 2, SECTION VII – Requirements of the Information System | Digital Economy Enhancement Project<br>2nd Floor, TF (Telecom Foundation) Complex, Sector G-9, Islamabad | --       |
| :             |                                                                             |                                                              |                                                                                                          |          |
|               |                                                                             |                                                              |                                                                                                          |          |

**Note:** -- indicates not applicable. “ indicates repetition of table entry above.

### SYSTEM INVENTORY TABLE (RECURRENT COST ITEMS)

| Line item number/<br>Component No. | Component                                                                                                                                                                                      | Relevant Technical Specifications No.                        | Y1 | Y2 | Y3 | ..Yn |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----|----|----|------|
| 1.                                 | All items/ resources/ services (if any) to achieve successful delivery, completion and acceptance of All Components including Deliverable 1 – 5 (D1 – D5) – Subsystem 1                        | PART 2, SECTION VII – Requirements of the Information System |    |    |    |      |
| 2.                                 | All items/ resources/ services (if any) to achieve successful delivery, completion and acceptance of Deliverable 6 (D6 including all the sub-sections/ component – D6-A to D6-E) – Subsystem 2 | PART 2, SECTION VII – Requirements of the Information System |    |    |    |      |
|                                    |                                                                                                                                                                                                |                                                              |    |    |    |      |
|                                    |                                                                                                                                                                                                |                                                              |    |    |    |      |
|                                    |                                                                                                                                                                                                |                                                              |    |    |    |      |
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**Note:** - - indicates not applicable. “ indicates repetition of table entry above.

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## **Background and Informational Materials/ Systems**

## **Background and Informational Materials/ Systems**

### **0.1 The Purchaser**

#### **0.1.1 Overview of the Agency’s Legal Basis, Organizational Role, and Core Objectives**

The Purchaser for this procurement is the **Ministry of Information Technology and Telecommunication (MoITT)**, Government of Pakistan. MoITT is the Federal Ministry mandated to formulate national policies, strategies, roadmaps and programs relating to information technology, telecommunications, AI, Cybersecurity, digital governance, and emerging technologies.

**Digital Economy Enhancement Project (DEEP)**, is a flagship project of MOITT- funded by World Bank - aimed at strengthening digital public infrastructure, improving digital service delivery, enabling data-driven governance, and fostering innovation across federal and provincial governments. Within DEEP, the Open Data Portal Ecosystem is positioned as a foundational component of Citizens, Business and Innovation support for ecosystem strengthening and bringing transparency, and effective and efficient use of data and resources across sectors.

#### **0.1.2 Overview of Stakeholders to the Information System**

The Open Data Portal Ecosystem serves a broad, multi-layered stakeholder environment & engagement, including but not limited to:

- **Federal Ministries, Divisions, and Attached Departments** acting as data custodians, regulators, and publishers
- **Provincial and Local Governments** acting as provincial data custodians, and contributing and consuming standardized open datasets
- **Regulatory Authorities** responsible for bring regulatory reforms and custodian of applicable regimes (fiscal/monetary etc.)
- **Academia, Research, and Think Tanks** using open data for analysis and evidence-based research
- **Private Sector, Startups, SMEs** leveraging datasets for innovation, business, product development, and services
- **Civil Society Organizations and Media** bringing awareness, improving outreach and promoting transparency and accountability
- **Citizens and Developers** accessing public data through portals, APIs, and visual tools

These stakeholders interact with the ecosystem in different capacities—as data providers, platform users, intermediaries, or beneficiaries—within a nationally governed open data framework.

### 0.1.3 Project Management and Decision-Making Arrangements

Project oversight is provided by MoITT under the DEEP governance structure in form of a dedicated Project Management Unit. Strategic guidance and inter-institutional coordination are aligned with national digital governance mechanisms introduced under the umbrella and vision of Digital Nation Pakistan in form of approved Act-2025.

## 0.2 The Purchaser’s Business Objectives for the Information System

### 0.2.1 Current Objectives, Procedures, and Processes

At present, public sector data in Pakistan is generated and managed across multiple institutions, often in isolated systems with varying standards, formats, and access mechanisms. Existing data publication practices are largely fragmented, with limited interoperability and inconsistent metadata, licensing, and update mechanisms.

The Government’s current objectives focus on improving data transparency, enhancing public access to information, and enabling evidence-based policymaking, while maintaining institutional autonomy over datasets.

### 0.2.2 Changes Enabled by the Information System

The Open Data Portal Ecosystem is intended to enable a shift toward a **federated, standardized, and policy-aligned national open data environment**, where datasets from multiple public bodies can be published, discovered, accessed, and reused through a common ecosystem. The system supports broader government objectives under DEEP and the Digital Pakistan Policy, including interoperability, reuse of public data, innovation enablement, and alignment with international open data practices .

### 0.2.3 Expected Benefits of the System

Expected benefits include improved citizen and business support, enhanced innovation, transparency and accountability, reduced duplication of data publication efforts, enhanced policy analysis and service design, stimulation of the digital economy through data-driven innovation, and increased public trust in government data.

## **B. INFORMATIONAL MATERIALS**

### **0.3 Legal, Regulatory, and Normative Context**

#### **0.3.1 Applicable Laws, Regulations, and Norms**

The Open Data Portal Ecosystem operates within a national legal and policy environment that includes but not limited to:

- Data Governance Policies, Standards and Guidelines
- Data Protection Laws and Regulations
- Digital Nation Pakistan Act, 2025
- Cloud First Policy, 2022
- Digital Pakistan Policy
- DEEP project legal and financing agreements with the World Bank
- Applicable federal and provincial rules, guidelines on public information, data protection, Cybersecurity, and procurement
- Other Rules and Guidelines as approved and applicable

#### **0.3.2 Existing Standards and Data Practices**

Public sector entities currently use a range of data formats, coding schemes, administrative classifications, and reporting structures. These include statistical datasets, administrative records, geospatial data, trade-related, economic and sector-specific information. Such datasets and publication practices are maintained by respective data custodians and serve as reference material for understanding the data landscape in the Open Data Portal.

### **0.4 Existing Information Systems and Technologies**

#### **0.4.1 Current Systems Relevant to the Information System**

Pakistan’s digital government ecosystem includes multiple national and provincial platforms for service delivery, registries, portals, and data repositories developed under various initiatives and with multiple agencies. These systems provide contextual background for integration, federation, or coexistence with the Open Data Portal Ecosystem.

#### **0.4.2 Ongoing and Planned Initiatives**

Ongoing initiatives under DEEP include the National Data Exchange Layer, National Digital Portals, Digital Identity Services, Digital Literacy and Sectoral Digitalization programs. Together, these initiatives shape the broader digital environment within which the Open Data Portal Ecosystem will operate.

## **0.5 Available Training Facilities**

### **0.5.1 Existing Training Resources**

MoITT, and its attached bodies and associated public sector institutions maintain and conduct training facilities, established innovation labs and incubation centres, and conduct capacity-building programs for government officials and technical personnel. These facilities support knowledge transfer, skills development, and adoption of digital platforms across government.

## **0.6 Site Drawings and Site Survey Information**

### **0.6.1 Implementation Sites**

The Information System is envisaged as a nationally deployed Digital Platform, logically accessible across federal and provincial government environments as well as the access to the private sector and startups. Physical hosting locations, data centers, and operational sites are managed by designated government entities in accordance with national ICT policies.

# **PART 3 – CONDITIONS OF CONTRACT AND CONTRACT FORMS**

## **SECTION VIII - GENERAL CONDITIONS OF CONTRACT**

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## General Conditions of Contract

### A. CONTRACT AND INTERPRETATION

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#### 1. Definitions

1.1 In this Contract, the following terms shall be interpreted as indicated below.

(a) contract elements

- (i) **“Contract”** means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein. The Contract Agreement and the Contract Documents shall constitute the Contract, and the term “the Contract” shall in all such documents be construed accordingly.
- (ii) **“Contract Documents”** means the documents specified in Article 1.1 (Contract Documents) of the Contract Agreement (including any amendments to these Documents).
- (iii) **“Contract Agreement”** means the agreement entered into between the Purchaser and the Supplier using the form of Contract Agreement contained in the Sample Contractual Forms Section of the request for proposals documents and any modifications to this form agreed to by the Purchaser and the Supplier. The date of the Contract Agreement shall be recorded in the signed form.
- (iv) **“GCC”** means the General Conditions of Contract.
- (v) **“SCC”** means the Special Conditions of Contract.
- (vi) **“Technical Requirements”** means the Technical Requirements in Section VII of the request for proposals documents.
- (vii) **“Implementation Schedule”** means the Implementation Schedule in Section VII of the request for proposals documents.
- (viii) **“Contract Price”** means the price or prices defined in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.

- (ix) **“Procurement Regulations”** refers to the edition **specified in the SCC** of the World Bank **“Procurement Regulations for IPF Borrowers”**.
  - (x) **“request for proposals document”** refers to the document issued by the Purchaser on the subject procurement process.
  - (xi) **“Sexual Exploitation and Abuse” “(SEA)”** means the following:

**Sexual Exploitation** is defined as any actual or attempted abuse of position of vulnerability, differential power or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another.

**Sexual Abuse** is defined as the actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.
  - (xii) **“Sexual Harassment” “(SH)”** is defined as unwelcome sexual advances, requests for sexual favors, and other verbal or physical conduct of a sexual nature by the Supplier’s Personnel with other Supplier’s or Purchaser’s personnel.
- (b) entities
- (i) **“Purchaser”** means the entity purchasing the Information System, as **specified in the SCC**.
  - (ii) **“Purchaser’s Personnel”** means all staff, labor and other employees of the Project Manager and of the Purchaser engaged in fulfilling the Purchaser’s obligations under the Contract; and any other personnel identified as Purchaser’s Personnel, by a notice from the Purchaser to the Supplier;
  - (iii) **“Project Manager”** means the person **named as such in the SCC** or otherwise appointed by the Purchaser in the manner provided in GCC Clause 18.1 (Project Manager) to perform the duties delegated by the Purchaser.
  - (iv) **“Supplier”** means the firm or Joint Venture whose proposal to **perform the Contract** has

been accepted by the Purchaser and is named as such in the Contract Agreement.

- (v) **“Supplier’s Representative”** means any person **nominated** by the Supplier and named as such in the Contract Agreement or otherwise approved by the Purchaser in the manner provided in GCC Clause 18.2 (Supplier’s Representative) to perform the duties delegated by the Supplier.
  - (vi) **“Supplier’s Personnel”** means all personnel whom the Supplier utilizes in the execution of the Contract, including the staff, labor and other employees of the Supplier and each Subcontractor; and any other personnel assisting the Supplier in the execution of the Contract;
  - (vii) **“Subcontractor”** means any firm to whom any of the obligations of the Supplier, including preparation of any design or supply of any Information Technologies or other Goods or Services, is subcontracted directly or indirectly by the Supplier.
  - (viii) **“Adjudicator”** means the person named in Appendix 2 of the Contract Agreement, **appointed** by agreement between the Purchaser and the Supplier to make a decision on or to settle any dispute between the Purchaser and the Supplier referred to him or her by the parties, pursuant to GCC Clause 43.1 (Adjudication).
  - (ix) **“The World Bank”** (also called “The Bank”) means the International Bank for Reconstruction and Development (IBRD) or the International Development Association (IDA).
- (c) scope
- (i) **“Information System,”** also called “the System,” means all the Information Technologies, Materials, and other Goods to be supplied, installed, integrated, and made operational (exclusive of the Supplier’s Equipment), together with the Services to be carried out by the Supplier under the Contract.
  - (ii) **“Subsystem”** means any subset of the System identified as such in the Contract that may be supplied, installed, tested, and commissioned

individually before Commissioning of the entire System.

- (iii) “Information Technologies” means all information processing and communications-related hardware, Software, supplies, and consumable items that the Supplier is required to supply and install under the Contract.
- (iv) “Goods” means all equipment, machinery, furnishings, Materials, and other tangible items that the Supplier is required to supply or supply and install under the Contract, including, without limitation, the Information Technologies and Materials, but excluding the Supplier’s Equipment.
- (v) “Services” means all technical, logistical, management, and any other Services to be provided by the Supplier under the Contract to supply, install, customize, integrate, and make operational the System. Such Services may include, but are not restricted to, activity management and quality assurance, design, development, customization, documentation, transportation, insurance, inspection, expediting, site preparation, installation, integration, training, data migration, Pre-commissioning, Commissioning, maintenance, and technical support.
- (vi) “The Project Plan” means the document to be developed by the Supplier and approved by the Purchaser, pursuant to GCC Clause 19, based on the requirements of the Contract and the Preliminary Project Plan included in the Supplier’s proposal. The “Agreed Project Plan” is the version of the Project Plan approved by the Purchaser, in accordance with GCC Clause 19.2. Should the Project Plan conflict with the Contract in any way, the relevant provisions of the Contract, including any amendments, shall prevail.
- (vii) “Software” means that part of the System which are instructions that cause information processing Subsystems to perform in a specific manner or execute specific operations.

- (viii) “System Software” means Software that provides the operating and management instructions for the underlying hardware and other components, and is identified as such in Appendix 4 of the Contract Agreement and such other Software as the parties may agree in writing to be Systems Software. Such System Software includes, but is not restricted to, micro-code embedded in hardware (i.e., “firmware”), operating systems, communications, system and network management, and utility software.
- (ix) “General-Purpose Software” means Software that supports general-purpose office and software development activities and is identified as such in Appendix 4 of the Contract Agreement and such other Software as the parties may agree in writing to be General-Purpose Software. Such General-Purpose Software may include, but is not restricted to, word processing, spreadsheet, generic database management, and application development software.
- (x) “Application Software” means Software formulated to perform specific business or technical functions and interface with the business or technical users of the System and is identified as such in Appendix 4 of the Contract Agreement and such other Software as the parties may agree in writing to be Application Software.
- (xi) “Standard Software” means Software identified as such in Appendix 4 of the Contract Agreement and such other Software as the parties may agree in writing to be Standard Software.
- (xii) “Custom Software” means Software identified as such in Appendix 4 of the Contract Agreement and such other Software as the parties may agree in writing to be Custom Software.
- (xiii) “Source Code” means the database structures, dictionaries, definitions, program source files, and any other symbolic representations necessary for the compilation, execution, and subsequent maintenance of the Software

(typically, but not exclusively, required for Custom Software).

- (xiv) “Materials” means all documentation in printed or printable form and all instructional and informational aides in any form (including audio, video, and text) and on any medium, provided to the Purchaser under the Contract.
  - (xv) “Standard Materials” means all Materials not specified as Custom Materials.
  - (xvi) “Custom Materials” means Materials developed by the Supplier at the Purchaser’s expense under the Contract and identified as such in Appendix 5 of the Contract Agreement and such other Materials as the parties may agree in writing to be Custom Materials. Custom Materials includes Materials created from Standard Materials.
  - (xvii) “Intellectual Property Rights” means any and all copyright, moral rights, trademark, patent, and other intellectual and proprietary rights, title and interests worldwide, whether vested, contingent, or future, including without limitation all economic rights and all exclusive rights to reproduce, fix, adapt, modify, translate, create derivative works from, extract or re-utilize data from, manufacture, introduce into circulation, publish, distribute, sell, license, sublicense, transfer, rent, lease, transmit or provide access electronically, broadcast, display, enter into computer memory, or otherwise use any portion or copy, in whole or in part, in any form, directly or indirectly, or to authorize or assign others to do so.
  - (xviii) “Supplier’s Equipment” means all equipment, tools, apparatus, or things of every kind required in or for installation, completion and maintenance of the System that are to be provided by the Supplier, but excluding the Information Technologies, or other items forming part of the System.
- (d) activities
- (i) “Delivery” means the transfer of the Goods from the Supplier to the Purchaser in accordance with

- the current edition Incoterms specified in the Contract.
- (ii) “Installation” means that the System or a Subsystem as specified in the Contract is ready for Commissioning as provided in GCC Clause 26 (Installation).
  - (iii) “Pre-commissioning” means the testing, checking, and any other required activity that may be specified in the Technical Requirements that are to be carried out by the Supplier in preparation for Commissioning of the System as provided in GCC Clause 26 (Installation).
  - (iv) “Commissioning” means operation of the System or any Subsystem by the Supplier following Installation, which operation is to be carried out by the Supplier as provided in GCC Clause 27.1 (Commissioning), for the purpose of carrying out Operational Acceptance Test(s).
  - (v) “Operational Acceptance Tests” means the tests specified in the Technical Requirements and Agreed Project Plan to be carried out to ascertain whether the System, or a specified Subsystem, is able to attain the functional and performance requirements specified in the Technical Requirements and Agreed Project Plan, in accordance with the provisions of GCC Clause 27.2 (Operational Acceptance Test).
  - (vi) “Operational Acceptance” means the acceptance by the Purchaser of the System (or any Subsystem(s) where the Contract provides for acceptance of the System in parts), in accordance with GCC Clause 27.3 (Operational Acceptance).
- (e) place and time
- (i) “Purchaser’s Country” is the **country named in the SCC**.
  - (ii) “Supplier’s Country” is the country in which the Supplier is legally organized, as named in the Contract Agreement.
  - (iii) **Unless otherwise specified in the SCC** “Project Site(s)” means the place(s) in the Site Table in the

Technical Requirements Section for the supply and installation of the System.

- (iv) “Eligible Country” means the countries and territories eligible for participation in procurements financed by the World Bank as defined in the Procurement Regulations.
- (v) “Day” means calendar day of the Gregorian Calendar.
- (vi) “Week” means seven (7) consecutive Days, beginning the day of the week as is customary in the Purchaser’s Country.
- (vii) “Month” means calendar month of the Gregorian Calendar.
- (viii) “Year” means twelve (12) consecutive Months.
- (ix) “Effective Date” means the date of fulfillment of all conditions specified in Article 3 (Effective Date for Determining Time for Achieving Operational Acceptance) of the Contract Agreement, for the purpose of determining the Delivery, Installation, and Operational Acceptance dates for the System or Subsystem(s).
- (x) “Contract Period” is the time period during which this Contract governs the relations and obligations of the Purchaser and Supplier in relation to the System, as **unless otherwise specified in the SCC**, the Contract shall continue in force until the Information System and all the Services have been provided, unless the Contract is terminated earlier in accordance with the terms set out in the Contract.
- (xi) “Defect Liability Period” (also referred to as the “Warranty Period”) means the period of validity of the warranties given by the Supplier commencing at date of the Operational Acceptance Certificate of the System or Subsystem(s), during which the Supplier is responsible for defects with respect to the System (or the relevant Subsystem[s]) as provided in GCC Clause 29 (Defect Liability).
- (xii) “The Coverage Period” means the Days of the Week and the hours of those Days during which

maintenance, operational, and/or technical support services (if any) must be available.

- (xiii) The Post-Warranty Services Period” means the number of years **defined in the SCC** (if any), following the expiration of the Warranty Period during which the Supplier may be obligated to provide Software licenses, maintenance, and/or technical support services for the System, either under this Contract or under separate contract(s).

## **2. Contract Documents**

- 2.1 Subject to Article 1.2 (Order of Precedence) of the Contract Agreement, all documents forming part of the Contract (and all parts of these documents) are intended to be correlative, complementary, and mutually explanatory. The Contract shall be read as a whole.

## **3. Interpretation**

- 3.1 Governing Language

3.1.1 **Unless otherwise specified in the SCC**, all Contract Documents and related correspondence exchanged between Purchaser and Supplier shall be written in the language of the request for proposals document (English), and the Contract shall be construed and interpreted in accordance with that language.

3.1.2 If any of the Contract Documents or related correspondence are prepared in a language other than the governing language under GCC Clause 3.1.1 above, the translation of such documents into the governing language shall prevail in matters of interpretation. The originating party, with respect to such documents shall bear the costs and risks of such translation.

- 3.2 Singular and Plural

The singular shall include the plural and the plural the singular, except where the context otherwise requires.

- 3.3 Headings

The headings and marginal notes in the GCC are included for ease of reference and shall neither constitute a part of the Contract nor affect its interpretation.

- 3.4 Persons

Words importing persons or parties shall include firms, corporations, and government entities.

### 3.5 Incoterms

Unless inconsistent with any provision of the Contract, the meaning of any trade term and the rights and obligations of parties thereunder shall be as prescribed by the Incoterms

Incoterms means international rules for interpreting trade terms published by the International Chamber of Commerce (latest edition), 38 Cours Albert 1<sup>er</sup>, 75008 Paris, France.

### 3.6 Entire Agreement

The Contract constitutes the entire agreement between the Purchaser and Supplier with respect to the subject matter of Contract and supersedes all communications, negotiations, and agreements (whether written or oral) of parties with respect to the subject matter of the Contract made prior to the date of Contract.

### 3.7 Amendment

No amendment or other variation of the Contract shall be effective unless it is in writing, is dated, expressly refers to the Contract, and is signed by a duly authorized representative of each party to the Contract.

### 3.8 Independent Supplier

The Supplier shall be an independent contractor performing the Contract. The Contract does not create any agency, partnership, joint venture, or other joint relationship between the parties to the Contract.

Subject to the provisions of the Contract, the Supplier shall be solely responsible for the manner in which the Contract is performed. All employees, representatives, or Subcontractors engaged by the Supplier in connection with the performance of the Contract shall be under the complete control of the Supplier and shall not be deemed to be employees of the Purchaser, and nothing contained in the Contract or in any subcontract awarded by the Supplier shall be construed to create any contractual relationship between any such employees, representatives, or Subcontractors and the Purchaser.

### 3.9 Joint Venture

If the Supplier is a Joint Venture of two or more firms, all such firms shall be jointly and severally bound to the Purchaser for the fulfillment of the provisions of the Contract and shall designate one of such firms to act as a leader with authority to bind the Joint Venture. The composition or

constitution of the Joint Venture shall not be altered without the prior consent of the Purchaser.

### 3.10 Nonwaiver

3.10.1 Subject to GCC Clause 3.10.2 below, no relaxation, forbearance, delay, or indulgence by either party in enforcing any of the terms and conditions of the Contract or the granting of time by either party to the other shall prejudice, affect, or restrict the rights of that party under the Contract, nor shall any waiver by either party of any breach of Contract operate as waiver of any subsequent or continuing breach of Contract.

3.10.2 Any waiver of a party's rights, powers, or remedies under the Contract must be in writing, must be dated and signed by an authorized representative of the party granting such waiver, and must specify the right and the extent to which it is being waived.

### 3.11 Severability

If any provision or condition of the Contract is prohibited or rendered invalid or unenforceable, such prohibition, invalidity, or unenforceability shall not affect the validity or enforceability of any other provisions and conditions of the Contract.

### 3.12 Country of Origin

"Origin" means the place where the Information Technologies, Materials, and other Goods for the System were produced or from which the Services are supplied. Goods are produced when, through manufacturing, processing, Software development, or substantial and major assembly or integration of components, a commercially recognized product results that is substantially different in basic characteristics or in purpose or utility from its components. The Origin of Goods and Services is distinct from the nationality of the Supplier and may be different.

## 4. Notices

4.1 Unless otherwise stated in the Contract, all notices to be given under the Contract shall be in writing and shall be sent, pursuant to GCC Clause 4.3 below, by personal delivery, airmail post, special courier, facsimile, electronic mail, or other electronic means, with the following provisions.

4.1.1 Any notice sent by facsimile, electronic mail, or EDI shall be confirmed within two (2) days after dispatch

by notice sent by airmail post or special courier, except as otherwise specified in the Contract.

- 4.1.2 Any notice sent by airmail post or special courier shall be deemed (in the absence of evidence of earlier receipt) to have been delivered ten (10) days after dispatch. In proving the fact of dispatch, it shall be sufficient to show that the envelope containing such notice was properly addressed, stamped, and conveyed to the postal authorities or courier service for transmission by airmail or special courier.
- 4.1.3 Any notice delivered personally or sent by facsimile, electronic mail, or EDI shall be deemed to have been delivered on the date of its dispatch.
- 4.1.4 Either party may change its postal, facsimile, electronic mail, or EDI addresses for receipt of such notices by ten (10) days' notice to the other party in writing.
- 4.2 Notices shall be deemed to include any approvals, consents, instructions, orders, certificates, information and other communication to be given under the Contract.
- 4.3 Pursuant to GCC Clause 18, notices from/to the Purchaser are normally given by, or addressed to, the Project Manager, while notices from/to the Supplier are normally given by, or addressed to, the Supplier's Representative, or in its absence its deputy if any. If there is no appointed Project Manager or Supplier's Representative (or deputy), or if their related authority is limited by the SCC for GCC Clauses 18.1 or 18.2.2, or for any other reason, the Purchaser or Supplier may give and receive notices at their fallback addresses. The address of the Project Manager and the fallback address of the Purchaser are as **specified in the SCC** or as subsequently established/amended. The address of the Supplier's Representative and the fallback address of the Supplier are as specified in Appendix 1 of the Contract Agreement or as subsequently established/amended.

- 5. Governing Law**
- 5.1 The Contract shall be governed by and interpreted in accordance with the laws of the country **specified in the SCC**.
- 5.2 Throughout the execution of the Contract, the Supplier shall comply with the import of goods and services prohibitions in the Purchaser's Country when
- (a) as a matter of law or official regulations, the Borrower's country prohibits commercial relations with that country; or
  - (b) by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's Country prohibits any import of goods from that country or any payments to any country, person, or entity in that country.
- 6. Fraud and Corruption**
- 6.1 The Bank requires compliance with the Bank's Anti-Corruption Guidelines and its prevailing sanctions policies and procedures as set forth in the WBG's Sanctions Framework, as set forth in the Appendix 1 to the GCC.
- 6.2 The Purchaser requires the Suppliers to disclose any commissions or fees that may have been paid or are to be paid to agents or any other party with respect to the procurement process or execution of the Contract. The information disclosed must include at least the name and address of the agent or other party, the amount and currency, and the purpose of the commission, gratuity or fee.

## **B. SUBJECT MATTER OF CONTRACT**

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- 7. Scope of the System**
- 7.1 Unless otherwise expressly **limited in the SCC** or Technical Requirements, the Supplier's obligations cover the provision of all Information Technologies, Materials and other Goods as well as the performance of all Services required for the design, development, and implementation (including procurement, quality assurance, assembly, associated site preparation, Delivery, Pre-commissioning, Installation, Testing, and Commissioning) of the System, in accordance with the plans, procedures, specifications, drawings, codes, and any other documents specified in the Contract and the Agreed Project Plan.
- 7.2 The Supplier shall, unless specifically excluded in the Contract, perform all such work and / or supply all such items

and Materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Operational Acceptance of the System as if such work and / or items and Materials were expressly mentioned in the Contract.

- 7.3 The Supplier's obligations (if any) to provide Goods and Services as implied by the Recurrent Cost tables of the Supplier's proposal, such as consumables, spare parts, and technical services (e.g., maintenance, technical assistance, and operational support), are as **specified in the SCC**, including the relevant terms, characteristics, and timings.

**8. Time for  
Commencement  
and Operational  
Acceptance**

- 8.1 The Supplier shall commence work on the System within the period **specified in the SCC**, and without prejudice to GCC Clause 28.2, the Supplier shall thereafter proceed with the System in accordance with the time schedule specified in the Implementation Schedule and any refinements made in the Agreed Project Plan.
- 8.2 The Supplier shall achieve Operational Acceptance of the System (or Subsystem(s) where a separate time for Operational Acceptance of such Subsystem(s) is specified in the Contract) in accordance with the time schedule specified in the Implementation Schedule and any refinements made in the Agreed Project Plan, or within such extended time to which the Supplier shall be entitled under GCC Clause 40 (Extension of Time for Achieving Operational Acceptance).

## 9. Supplier's Responsibilities

9.1 The Supplier shall conduct all activities with due care and diligence, in accordance with the Contract and with the skill and care expected of a competent provider of information technologies, information systems, support, maintenance, training, and other related services, or in accordance with best industry practices. In particular, the Supplier shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand. The Supplier shall ensure that its Subcontractors carry out the work on the Information System in accordance with the Contract, including complying with relevant environmental and social requirements and the obligations set out in GCC Clause 9.9.

The Supplier shall at all times take all reasonable precautions to maintain the health and safety of the Supplier's Personnel employed for the execution of the Contract at the Project Site/s in the Purchaser's country where the Contract is executed.

If **required in the SCC**, the Supplier shall submit to the Purchaser for its approval a health and safety manual which has been specifically prepared for the Contract.

The health and safety manual shall be in addition to any other similar document required under applicable health and safety regulations and laws.

The health and safety manual shall set out any applicable health and safety requirement under the Contract,

(a) which may include:

- (i) the procedures to establish and maintain a safe working environment;
- (ii) the procedures for prevention, preparedness and response activities to be implemented in the case of an emergency event (i.e. an unanticipated incident, arising from natural or man-made hazards);
- (iii) the measures to be taken to avoid or minimize the potential for community exposure to water-borne, water-based, water-related, and vector-borne diseases,
- (iv) the measures to be implemented to avoid or minimize the spread of communicable diseases; and

(b) any other requirements stated in the Purchaser's Requirements.

- 9.2 The Supplier confirms that it has entered into this Contract on the basis of a proper examination of the data relating to the System provided by the Purchaser and on the basis of information that the Supplier could have obtained from a visual inspection of the site (if access to the site was available) and of other data readily available to the Supplier relating to the System as at the date twenty-eight (28) days prior to proposal submission. The Supplier acknowledges that any failure to acquaint itself with all such data and information shall not relieve its responsibility for properly estimating the difficulty or cost of successfully performing the Contract.
- 9.3 The Supplier shall be responsible for timely provision of all resources, information, and decision making under its control that are necessary to reach a mutually Agreed Project Plan (pursuant to GCC Clause 19.2) within the time schedule specified in the Implementation Schedule. Failure to provide such resources, information, and decision-making may constitute grounds for termination pursuant to GCC Clause 41.2.
- 9.4 The Supplier shall acquire in its name all permits, approvals, and/or licenses from all local, state, or national government authorities or public service undertakings in the Purchaser's Country that are necessary for the performance of the Contract, including, without limitation, visas for the Supplier's Personnel and entry permits for all imported Supplier's Equipment. The Supplier shall acquire all other permits, approvals, and/or licenses that are not the responsibility of the Purchaser under GCC Clause 10.4 and that are necessary for the performance of the Contract.
- 9.5 The Supplier shall comply with all laws in force in the Purchaser's Country. The laws will include all national, provincial, municipal, or other laws that affect the performance of the Contract and are binding upon the Supplier. The Supplier shall indemnify and hold harmless the Purchaser from and against any and all liabilities, damages, claims, fines, penalties, and expenses of whatever nature arising or resulting from the violation of such laws by the Supplier or its personnel, including the Subcontractors and their personnel, but without prejudice to GCC Clause 10.1. The Supplier shall not indemnify the Purchaser to the extent that such liability, damage, claims, fines, penalties, and

expenses were caused or contributed to by a fault of the Purchaser.

- 9.6 Any Information Technologies or other Goods and Services that will be incorporated in or be required for the System and other supplies shall have their Origin, as defined in GCC Clause 3.12, in a country that shall be an Eligible Country, as defined in GCC Clause 1.1 (e) (iv).
- 9.7 Pursuant to paragraph 2.2 e. of the Appendix 1 to the General Conditions of Contract, the Supplier shall permit and shall cause its agents (where declared or not), subcontractors, subconsultants, service providers, suppliers, and personnel, to permit, the Bank and/or persons appointed by the Bank to inspect the site and/or the accounts, records and other documents relating to the procurement process, selection and/or contract execution, and to have such accounts, records and other documents audited by auditors appointed by the Bank. The Supplier's and its Subcontractors' and subconsultants' attention is drawn to GCC Clause 6.1 (Fraud and Corruption) which provides, inter alia, that acts intended to materially impede the exercise of the Bank's inspection and audit rights constitute a prohibited practice subject to contract termination (as well as to a determination of ineligibility pursuant to the Bank's prevailing sanctions procedures).
- 9.8 The Supplier shall conform to the sustainable procurement contractual provisions, if and as **specified in the SCC**.
- 9.9 **Code of Conduct**

The Supplier shall have a Code of Conduct for the Supplier's Personnel employed for the execution of the Contract at the Project Site/s.

The Supplier shall take all necessary measures to ensure that each such personnel is made aware of the Code of Conduct including specific behaviors that are prohibited, and understands the consequences of engaging in such prohibited behaviors.

These measures include providing instructions and documentation that can be understood by such personnel, and seeking to obtain that person's signature acknowledging receipt of such instructions and/or documentation, as appropriate.

The Supplier shall also ensure that the Code of Conduct is visibly displayed in the Project Site/s as well as, as applicable, in areas outside the Project Site/s accessible to the local

community and any project affected people. The posted Code of Conduct shall be provided in languages comprehensible to the Supplier's Personnel, Purchaser's Personnel and the local community.

The Supplier's Management Strategy and Implementation Plans, if applicable, shall include appropriate processes for the Supplier to verify compliance with these obligations.

9.10 The Supplier shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs, and all local laws and regulations pertaining to the employment of labor.

9.11 The Supplier, including its Subcontractors, shall comply with all applicable safety obligations. The Supplier shall at all times take all reasonable precautions to maintain the health and safety of the Supplier's Personnel employed for the execution of Contract at the Project Site/s.

#### 9.12 Training of Supplier's Personnel

The Supplier shall provide appropriate training to relevant Supplier's Personnel on any applicable environmental and social aspect of the Contract, including appropriate sensitization on prohibition of SEA, health and safety.

As stated in the Purchaser's Requirements or as instructed by the Project Manager, the Supplier shall also allow appropriate opportunities for the relevant personnel to be trained on any applicable environmental and social aspects of the Contract by the Purchaser's Personnel and/or other personnel assigned by the Purchaser.

The Supplier shall provide training on SEA and SH, including its prevention, to any of its personnel who has a role to supervise other Supplier's Personnel.

#### 9.13 Stakeholder engagements

The Supplier shall provide relevant contract- related information, as the Purchaser and/or Project Manager may reasonably request to conduct contract stakeholder engagement. "Stakeholder" refers to individuals or groups who:

- (a) are affected or likely to be affected by the Contract;  
and
- (b) may have an interest in the Contract.

The Supplier may also directly participate in contract stakeholder engagements, as the Purchaser and/or Project Manager may reasonably request.

#### 9.14 Forced Labor

The Supplier, including its Subcontractors, shall not employ or engage forced labour. Forced labour consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.

No persons shall be employed or engaged who have been subject to trafficking. Trafficking in persons is defined as the recruitment, transportation, transfer, harbouring or receipt of persons by means of the threat or use of force or other forms of coercion, abduction, fraud, deception, abuse of power, or of a position of vulnerability, or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purposes of exploitation.

#### 9.15 Child Labor

The Supplier, including its Subcontractors, shall not employ or engage a child under the age of 14 unless the national law specifies a higher age (the minimum age).

The Supplier, including its Subcontractors, shall not employ or engage a child between the minimum age and the age of 18 in a manner that is likely to be hazardous, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

The Supplier, including its Subcontractors, shall only employ or engage children between the minimum age and the age of 18 after an appropriate risk assessment has been conducted by the Supplier with the Project Manager's consent. The Supplier shall be subject to regular monitoring by the Project Manager that includes monitoring of health, working conditions and hours of work.

Work considered hazardous for children is work that, by its nature or the circumstances in which it is carried out, is likely to jeopardize the health, safety, or morals of children. Such work activities prohibited for children include work:

- (a) with exposure to physical, psychological or sexual abuse;
- (b) underground, underwater, working at heights or in confined spaces;
- (c) with dangerous machinery, equipment or tools, or involving handling or transport of heavy loads;
- (d) in unhealthy environments exposing children to hazardous substances, agents, or processes, or to temperatures, noise or vibration damaging to health; or
- (e) under difficult conditions such as work for long hours, during the night or in confinement on the premises of the employer.

#### 9.16 Non-Discrimination and Equal Opportunity

The Supplier shall not make decisions relating to the employment or treatment of personnel for the execution of the Contract on the basis of personal characteristics unrelated to inherent job requirements. The Supplier shall base the employment of personnel for the execution of the Contract on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to any aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices.

Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination. The Supplier shall provide protection and assistance as necessary to ensure non-discrimination and equal opportunity, including for specific groups such as women, people with disabilities, migrant workers and children (of working age in accordance with GCC Clause 9.15).

#### 9.17 Personnel Grievance Mechanism

The Supplier shall have a grievance mechanism for personnel employed in the execution of the Contract to raise workplace concerns. The grievance mechanism shall be proportionate to the nature, scale, risks and impacts of the Contract. The grievance mechanism may utilize existing grievance mechanisms, provided that they are properly

designed and implemented, address concerns promptly, and are readily accessible to such personnel.

#### 9.18 Security of the Project Site

**If stated in the SCC**, the Supplier shall be responsible for the security at the Project Site/s including providing and maintaining at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the locations, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.

In making security arrangements, the Supplier shall be guided by applicable laws and any other requirements that may be stated in the Purchaser's Requirements.

The Supplier shall (i) conduct appropriate background checks on any personnel retained to provide security; (ii) train the security personnel adequately (or determine that they are properly trained) in the use of force (and where applicable, firearms), and appropriate conduct towards the Supplier's Personnel, Purchaser's Personnel and affected communities; and (iii) require the security personnel to act within the applicable Laws and any requirements set out in the Purchaser's Requirements.

The Supplier shall not permit any use of force by security personnel in providing security except when used for preventive and defensive purposes in proportion to the nature and extent of the threat.

#### 9.19 Recruitment of Persons

The Supplier shall not recruit, or attempt to recruit, either on limited time or permanent basis or through any other contractual agreement, staff and labor from amongst the Purchaser's Personnel.

#### 9.20 **Unless otherwise specified in the SCC** the Supplier shall have no other Supplier responsibilities.

### **10. Purchaser's Responsibilities**

10.1 The Purchaser shall ensure the accuracy of all information and/or data to be supplied by the Purchaser to the Supplier, except when otherwise expressly stated in the Contract.

10.2 The Purchaser shall be responsible for timely provision of all resources, information, and decision making under its control that are necessary to reach an Agreed Project Plan (pursuant to GCC Clause 19.2) within the time schedule specified in the Implementation Schedule. Failure to

- provide such resources, information, and decision making may constitute grounds for Termination pursuant to GCC Clause 41.3.1 (b).
- 10.3 The Purchaser shall be responsible for acquiring and providing legal and physical possession of the site and access to it, and for providing possession of and access to all other areas reasonably required for the proper execution of the Contract.
- 10.4 If requested by the Supplier, the Purchaser shall use its best endeavors to assist the Supplier in obtaining in a timely and expeditious manner all permits, approvals, and/or licenses necessary for the execution of the Contract from all local, state, or national government authorities or public service undertakings that such authorities or undertakings require the Supplier or Subcontractors or the Supplier's Personnel, as the case may be, to obtain.
- 10.5 In such cases where the responsibilities of specifying and acquiring or upgrading telecommunications and/or electric power services falls to the Supplier, as specified in the Technical Requirements, SCC, Agreed Project Plan, or other parts of the Contract, the Purchaser shall use its best endeavors to assist the Supplier in obtaining such services in a timely and expeditious manner.
- 10.6 The Purchaser shall be responsible for timely provision of all resources, access, and information necessary for the Installation and Operational Acceptance of the System (including, but not limited to, any required telecommunications or electric power services), as identified in the Agreed Project Plan, except where provision of such items is explicitly identified in the Contract as being the responsibility of the Supplier. Delay by the Purchaser may result in an appropriate extension of the Time for Operational Acceptance, at the Supplier's discretion.
- 10.7 Unless otherwise specified in the Contract or agreed upon by the Purchaser and the Supplier, the Purchaser shall provide sufficient, properly qualified operating and technical personnel, as required by the Supplier to properly carry out Delivery, Pre-commissioning, Installation, Commissioning, and Operational Acceptance, at or before the time specified in the Implementation Schedule and the Agreed Project Plan.
- 10.8 The Purchaser will designate appropriate staff for the training courses to be given by the Supplier and shall make

all appropriate logistical arrangements for such training as specified in the Technical Requirements, SCC, the Agreed Project Plan, or other parts of the Contract.

- 10.9 The Purchaser assumes primary responsibility for the Operational Acceptance Test(s) for the System, in accordance with GCC Clause 27.2, and shall be responsible for the continued operation of the System after Operational Acceptance. However, this shall not limit in any way the Supplier's responsibilities after the date of Operational Acceptance otherwise specified in the Contract.
- 10.10 The Purchaser is responsible for performing and safely storing timely and regular backups of its data and Software in accordance with accepted data management principles, except where such responsibility is clearly assigned to the Supplier elsewhere in the Contract.
- 10.11 All costs and expenses involved in the performance of the obligations under this GCC Clause 10 shall be the responsibility of the Purchaser, save those to be incurred by the Supplier with respect to the performance of the Operational Acceptance Test(s), in accordance with GCC Clause 27.2.
- 10.12 **Unless otherwise specified in the SCC** the Purchaser shall have no other Purchaser responsibilities.

### C. PAYMENT

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- 11. Contract Price**
- 11.1 The Contract Price shall be as specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement.
- 11.2 Unless an adjustment clause is **provided for in the SCC**, the Contract Price shall be a firm lump sum not subject to any alteration, except in the event of a Change in the System pursuant to GCC Clause 39 or to other clauses in the Contract;
- 11.3 The Supplier shall be deemed to have satisfied itself as to the correctness and sufficiency of the Contract Price, which shall, except as otherwise provided for in the Contract, cover all its obligations under the Contract.

**12. Terms of Payment**

- 12.1 The Supplier's request for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the System or Subsystem(s), Delivered, Pre-commissioned, Installed, and Operationally Accepted, and by documents submitted pursuant to GCC Clause 22.5 and upon fulfillment of other obligations stipulated in the Contract.

The Contract Price shall be paid as **specified in the SCC**.

- 12.2 No payment made by the Purchaser herein shall be deemed to constitute acceptance by the Purchaser of the System or any Subsystem(s).
- 12.3 Payments shall be made promptly by the Purchaser, but in no case later than forty five (45) days after submission of a valid invoice by the Supplier. In the event that the Purchaser fails to make any payment by its respective due date or within the period set forth in the Contract, the Purchaser shall pay to the Supplier interest on the amount of such delayed payment at the rate(s) **specified in the SCC** for the period of delay until payment has been made in full, whether before or after judgment or arbitration award.
- 12.4 Payments shall be made in the currency(ies) specified in the Contract Agreement, pursuant to GCC Clause 11. For Goods and Services supplied locally, payments shall be made **as specified in the SCC**.
- 12.5 **Unless otherwise specified in the SCC**, payment of the foreign currency portion of the Contract Price for Goods supplied from outside the Purchaser's Country shall be made to the Supplier through an irrevocable letter of credit opened by an authorized bank in the Supplier's Country and will be payable on presentation of the appropriate documents. It is agreed that the letter of credit will be subject to Article 10 of the latest revision of *Uniform Customs and Practice for Documentary Credits*, published by the International Chamber of Commerce, Paris.
- 12.6 **As specified in the SCC**, if the Supplier fails to perform its cyber security obligations under the Contract, an assessed amount, as determined by the Project Manager, may be withheld until the obligation has been performed.

### 13. Securities

#### 13.1 Issuance of Securities

The Supplier shall provide the securities specified below in favor of the Purchaser at the times and in the amount, manner, and form specified below.

#### 13.2 Advance Payment Security

13.2.1 The Supplier shall provide within twenty-eight (28) days of the notification of Contract award an Advance Payment Security in the amount and currency of the Advance Payment specified in SCC for GCC Clause 12.1 above and valid until the System is Operationally Accepted.

13.2.2 The security shall be in the form provided in the request for proposal document or in another form acceptable to the Purchaser. The amount of the security shall be reduced in proportion to the value of the System executed by and paid to the Supplier from time to time and shall automatically become null and void when the full amount of the advance payment has been recovered by the Purchaser. **Unless otherwise specified in the SCC**, the reduction in value and expiration of the Advance Payment Security are calculated as follows:

$P*a/(100-a)$ , where “P” is the sum of all payments effected so far to the Supplier (excluding the Advance Payment), and “a” is the Advance Payment expressed as a percentage of the Contract Price pursuant to the SCC for GCC Clause 12.1.

The security shall be returned to the Supplier immediately after its expiration.

#### 13.3 Performance Security

13.3.1 The Supplier shall, within twenty-eight (28) days of the notification of Contract award, provide a security for the due performance of the Contract in the amount and currency **specified in the SCC**.

13.3.2 The security shall be a bank guarantee in the form provided in the Sample Contractual Forms Section of the request for proposal document, or it shall be in another form acceptable to the Purchaser.

13.3.3 The security shall automatically become null and void once all the obligations of the Supplier under the Contract have been fulfilled, including, but not limited to, any obligations during the Warranty Period and any

extensions to the period. The security shall be returned to the Supplier no later than twenty-eight (28) days after its expiration.

- 13.3.4 Upon Operational Acceptance of the entire System, the security shall be reduced to the amount **specified in the SCC**, on the date of the Operational Acceptance, so that the reduced security would only cover the remaining warranty obligations of the Supplier.

#### 14. Taxes and Duties

- 14.1 For Goods or Services supplied from outside the Purchaser's country, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside the Purchaser's country. Any duties, such as importation or customs duties, and taxes and other levies, payable in the Purchaser's country for the supply of Goods and Services from outside the Purchaser's country are the responsibility of the Purchaser unless these duties or taxes have been made part of the Contract Price in Article 2 of the Contract Agreement and the Price Schedule it refers to, in which case the duties and taxes will be the Supplier's responsibility.
- 14.2 For Goods or Services supplied locally, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred until delivery of the contracted Goods or Services to the Purchaser. The only exception are taxes or duties, such as value-added or sales tax or stamp duty as apply to, or are clearly identifiable, on the invoices and provided they apply in the Purchaser's country, and only if these taxes, levies and/or duties are also excluded from the Contract Price in Article 2 of the Contract Agreement and the Price Schedule it refers to.
- 14.3 If any tax exemptions, reductions, allowances, or privileges may be available to the Supplier in the Purchaser's Country, the Purchaser shall use its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.
- 14.4 For the purpose of the Contract, it is agreed that the Contract Price specified in Article 2 (Contract Price and Terms of Payment) of the Contract Agreement is based on the taxes, duties, levies, and charges prevailing at the date twenty-eight (28) days prior to the date of proposal submission in the Purchaser's Country (also called "Tax" in this GCC Clause 14.4). If any Tax rates are increased or decreased, a new Tax is introduced, an existing Tax is

abolished, or any change in interpretation or application of any Tax occurs in the course of the performance of the Contract, which was or will be assessed on the Supplier, its Subcontractors, or their employees in connection with performance of the Contract, an equitable adjustment to the Contract Price shall be made to fully take into account any such change by addition to or reduction from the Contract Price, as the case may be.

## D. INTELLECTUAL PROPERTY

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### 15. Copyright

- 15.1 The Intellectual Property Rights in all Standard Software and Standard Materials shall remain vested in the owner of such rights.
- 15.2 The Purchaser agrees to restrict use, copying, or duplication of the Standard Software and Standard Materials in accordance with GCC Clause 16, except that additional copies of Standard Materials may be made by the Purchaser for use within the scope of the project of which the System is a part, in the event that the Supplier does not deliver copies within thirty (30) days from receipt of a request for such Standard Materials.
- 15.3 The Purchaser's contractual rights to use the Standard Software or elements of the Standard Software may not be assigned, licensed, or otherwise transferred voluntarily except in accordance with the relevant license agreement or **unless otherwise specified in the SCC** to a legally constituted successor organization (e.g., a reorganization of a public entity formally authorized by the government or through a merger or acquisition of a private entity).
- 15.4 **Unless otherwise specified in the SCC**, the Intellectual Property Rights in all Custom Software and Custom Materials specified in Appendices 4 and 5 of the Contract Agreement (if any) shall, at the date of this Contract or on creation of the rights (if later than the date of this Contract), vest in the Purchaser. The Supplier shall do and execute or arrange for the doing and executing of each necessary act, document, and thing (as legally sufficient) that the Purchaser may consider necessary or desirable to perfect the right, title, and interest of the Purchaser in and to those rights. In respect of such Custom Software and Custom Materials, the Supplier shall ensure that the holder of a moral right in such an item does not assert it, and the Supplier shall, if requested to do so by the Purchaser and

where permitted by applicable law, ensure that the holder of such a moral right waives it.

- 15.5 **Unless otherwise specified in the SCC**, escrow arrangements shall NOT be required.

## 16. Software License Agreements

- 16.1 Except to the extent that the Intellectual Property Rights in the Software vest in the Purchaser, the Supplier hereby grants to the Purchaser license to access and use the Software, including all inventions, designs, and marks embodied in the Software.

Such license to access and use the Software shall:

- (a) be:
  - (i) nonexclusive;
  - (ii) fully paid up and irrevocable (except that it shall terminate if the Contract terminates under GCC Clauses 41.1 or 41.3);
  - (iii) **unless otherwise specified in the SCC** valid throughout the territory of the Purchaser's Country;
  - (iv) **unless otherwise specified in the SCC** subject to NO additional restrictions.
- (b) permit the Software to be:
  - (i) used or copied for use on or with the computer(s) for which it was acquired (if specified in the Technical Requirements and/or the Supplier's proposal), plus a backup computer(s) of the same or similar capacity, if the primary is(are) inoperative, and during a reasonable transitional period when use is being transferred between primary and backup;
  - (ii) used or copied for use on or transferred to a replacement computer(s), (and use on the original and replacement computer(s) may be simultaneous during a reasonable transitional period) provided that, if the Technical Requirements and/or the Supplier's proposal specifies a class of computer to which the license is restricted, the replacement computer(s) is(are) within that class;
  - (iii) if the nature of the System is such as to permit such access, accessed from other computers connected to the primary and/or backup computer(s) by

means of a local or wide-area network or similar arrangement, and used on or copied for use on those other computers to the extent necessary to that access;

- (iv) reproduced for safekeeping or backup purposes;
- (v) customized, adapted, or combined with other computer software for use by the Purchaser, provided that derivative software incorporating any substantial part of the delivered, restricted Software shall be subject to same restrictions as are set forth in this Contract;
- (vi) **unless otherwise specified in the SCC**, disclosed to, and reproduced for use by, support service suppliers and their subcontractors, to the extent reasonably necessary to the performance of their support service contracts, subject to the same restrictions as are set forth in this Contract; and
- (vii) **unless otherwise specified in the SCC** disclosed to, and reproduced for use by, NO other parties.

- 16.2 The Supplier has the right to audit the Standard Software to verify compliance with the above license agreements. **Unless otherwise specified in the SCC**, the Purchaser will make available to the Supplier, within seven (7) days of a written request, accurate and up-to-date records of the number and location of copies, the number of authorized users, or any other relevant data required to demonstrate use of the Standard Software as per the license agreement. If and only if, expressly agreed in writing between the Purchaser and the Supplier, Purchaser will allow, under a pre-specified agreed procedure, the execution of embedded software functions under Supplier's control, and unencumbered transmission of resulting information on software usage.

**17. Confidential Information**

- 17.1 **Unless otherwise specified in the SCC**, the "Receiving Party" (either the Purchaser or the Supplier) shall keep confidential and shall not, without the written consent of the other party to this Contract ("the Disclosing Party"), divulge to any third party any documents, data, or other information of a confidential nature ("Confidential Information") connected with this Contract, and furnished directly or indirectly by the Disclosing Party prior to or during performance, or following termination, of this Contract.
- 17.2 For the purposes of GCC Clause 17.1, the Supplier is also deemed to be the Receiving Party of Confidential Information generated by the Supplier itself in the course of the performance of its obligations under the Contract and relating to the businesses, finances, suppliers, employees, or other contacts of the Purchaser or the Purchaser's use of the System.
- 17.3 Notwithstanding GCC Clauses 17.1 and 17.2:
- (a) the Supplier may furnish to its Subcontractor Confidential Information of the Purchaser to the extent reasonably required for the Subcontractor to perform its work under the Contract; and
  - (b) the Purchaser may furnish Confidential Information of the Supplier: (i) to its support service suppliers and their subcontractors to the extent reasonably required for them to perform their work under their support service contracts; and (ii) to its affiliates and subsidiaries,
- in which event the Receiving Party shall ensure that the person to whom it furnishes Confidential Information of the Disclosing Party is aware of and abides by the Receiving Party's obligations under this GCC Clause 17 as if that person were party to the Contract in place of the Receiving Party.
- 17.4 The Purchaser shall not, without the Supplier's prior written consent, use any Confidential Information received from the Supplier for any purpose other than the operation, maintenance and further development of the System. Similarly, the Supplier shall not, without the Purchaser's prior written consent, use any Confidential Information received from the Purchaser for any purpose other than those that are required for the performance of the Contract.

- 17.5 The obligation of a party under GCC Clauses 17.1 through 17.4 above, however, shall not apply to that information which:
- (a) now or hereafter enters the public domain through no fault of the Receiving Party;
  - (b) can be proven to have been possessed by the Receiving Party at the time of disclosure and that was not previously obtained, directly or indirectly, from the Disclosing Party;
  - (c) otherwise lawfully becomes available to the Receiving Party from a third party that has no obligation of confidentiality;
  - (d) is being provided to the Bank.
- 17.6 The above provisions of this GCC Clause 17 shall not in any way modify any undertaking of confidentiality given by either of the parties to this Contract prior to the date of the Contract in respect of the System or any part thereof.
- 17.7 **Unless otherwise specified in the SCC**, the provisions of this GCC Clause 17 shall survive the termination, for whatever reason, of the Contract for three (3) years.

## **E. SUPPLY, INSTALLATION, TESTING, COMMISSIONING, AND ACCEPTANCE OF THE SYSTEM**

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### **18. Representatives**      18.1 Project Manager

If the Project Manager is not named in the Contract, then within fourteen (14) days of the Effective Date, the Purchaser shall appoint and notify the Supplier in writing of the name of the Project Manager. The Purchaser may from time to time appoint some other person as the Project Manager in place of the person previously so appointed and shall give a notice of the name of such other person to the Supplier without delay. No such appointment shall be made at such a time or in such a manner as to impede the progress of work on the System. Such appointment shall take effect only upon receipt of such notice by the Supplier. **Unless otherwise specified in the SCC** (if any), the Project Manager shall have the authority to represent the Purchaser on all day-to-day matters relating to the System or arising from the Contract, and shall normally be the person giving or receiving notices on behalf of the Purchaser pursuant to GCC Clause 4.

## 18.2 Supplier's Representative

- 18.2.1 If the Supplier's Representative is not named in the Contract, then within fourteen (14) days of the Effective Date, the Supplier shall appoint the Supplier's Representative and shall request the Purchaser in writing to approve the person so appointed. The request must be accompanied by a detailed curriculum vitae for the nominee, as well as a description of any other System or non-System responsibilities the nominee would retain while performing the duties of the Supplier's Representative. If the Purchaser does not object to the appointment within fourteen (14) days, the Supplier's Representative shall be deemed to have been approved. If the Purchaser objects to the appointment within fourteen (14) days giving the reason therefor, then the Supplier shall appoint a replacement within fourteen (14) days of such objection in accordance with this GCC Clause 18.2.1.
- 18.2.2 **Unless otherwise specified in the SCC** (if any), the Supplier's Representative shall have the authority to represent the Supplier on all day-to-day matters relating to the System or arising from the Contract, and shall normally be the person giving or receiving notices on behalf of the Supplier pursuant to GCC Clause 4.
- 18.2.3 The Supplier shall not revoke the appointment of the Supplier's Representative without the Purchaser's prior written consent, which shall not be unreasonably withheld. If the Purchaser consents to such an action, the Supplier shall appoint another person of equal or superior qualifications as the Supplier's Representative, pursuant to the procedure set out in GCC Clause 18.2.1.
- 18.2.4 The Supplier's Representative and staff are obliged to work closely with the Purchaser's Project Manager and staff, act within their own authority, and abide by directives issued by the Purchaser that are consistent with the terms of the Contract. The Supplier's Representative is responsible for managing the activities of the Supplier's Personnel.
- 18.2.5 The Supplier's Representative may, subject to the approval of the Purchaser (which shall not be unreasonably withheld), at any time delegate to any person any of the powers, functions, and authorities vested in him or her. Any such delegation may be

revoked at any time. Any such delegation or revocation shall be subject to a prior notice signed by the Supplier's Representative and shall specify the powers, functions, and authorities thereby delegated or revoked. No such delegation or revocation shall take effect unless and until the notice of it has been delivered.

18.2.6 Any act or exercise by any person of powers, functions and authorities so delegated to him or her in accordance with GCC Clause 18.2.5 shall be deemed to be an act or exercise by the Supplier's Representative.

### 18.3 Removal of Supplier's Personnel

18.3.1 The Project Manager may require the Supplier to remove (or cause to be removed) the Supplier's Representative or any other person employed by the Supplier in the execution of the Contract, who:

- (a) persists in any misconduct or lack of care;
- (b) carries out duties incompetently or negligently;
- (c) fails to comply with any provision of the Contract;
- (d) persists in any conduct which is prejudicial to safety, health, or the protection of the environment;
- (e) based on reasonable evidence, is determined to have engaged in Fraud and Corruption during the execution of the Contract;
- (f) has been recruited from the Purchaser's Personnel;
- (g) engages in any other behaviour which breaches the Code of Conduct, as applicable;

If appropriate, the Supplier shall then promptly appoint (or cause to be appointed) a suitable replacement with equivalent skills and experience.

Notwithstanding any requirement from the Project Manager to remove or cause to remove any person, the Supplier shall take immediate action as appropriate in response to any violation of (a) through (g) above. Such immediate action shall include removing (or causing to be removed) from work on the System, any person Employed by the Supplier in the execution of the Contract who engages in (a), (b), (c), (d), (e) or (g) above or has been recruited as stated in (f) above.

18.3.2 If any representative or person employed by the Supplier is removed in accordance with GCC Clause 18.3.1, the Supplier shall, where required, promptly appoint a suitable replacement with equivalent skills and experience.

## 19. Project Plan

- 19.1 In close cooperation with the Purchaser and based on the Preliminary Project Plan included in the Supplier's proposal, the Supplier shall develop a Project Plan encompassing the activities specified in the Contract. The contents of the Project Plan shall be as **specified in the SCC** and/or Technical Requirements.
- 19.2 **Unless otherwise specified in the SCC**, within thirty (30) days from the Effective Date of the Contract, the Supplier shall present a Project Plan to the Purchaser. Such submission to the Purchaser shall include any applicable environmental and social management plan to manage environmental and social risks and impacts. The Purchaser shall, within fourteen (14) days of receipt of the Project Plan, notify the Supplier of any respects in which it considers that the Project Plan does not adequately ensure that the proposed program of work, proposed methods, and/or proposed Information Technologies will satisfy the Technical Requirements and/or the SCC (in this Clause 19.2 called "non-conformities" below). The Supplier shall, within five (5) days of receipt of such notification, correct the Project Plan and resubmit to the Purchaser. The Purchaser shall, within five (5) days of resubmission of the Project Plan, notify the Supplier of any remaining non-conformities. This procedure shall be repeated as necessary until the Project Plan is free from non-conformities. When the Project Plan is free from non-conformities, the Purchaser shall provide confirmation in writing to the Supplier. This approved Project Plan ("the Agreed Project Plan") shall be contractually binding on the Purchaser and the Supplier.
- 19.3 If required, the impact on the Implementation Schedule of modifications agreed during finalization of the Agreed Project Plan shall be incorporated in the Contract by amendment, in accordance with GCC Clauses 39 and 40.
- 19.4 The Supplier shall undertake to supply, install, test, and commission the System in accordance with the Agreed Project Plan and the Contract.

19.5 **Unless otherwise specified in the SCC**, the Supplier shall submit to the Purchaser Monthly Progress Reports summarizing:

- (i) results accomplished during the prior period;
- (ii) cumulative deviations to date from schedule of progress milestones as specified in the Agreed Project Plan;
- (iii) corrective actions to be taken to return to planned schedule of progress; proposed revisions to planned schedule;
- (iv) other issues and outstanding problems; proposed actions to be taken;
- (v) resources that the Supplier expects to be provided by the Purchaser and/or actions to be taken by the Purchaser in the next reporting period;
- (vi) status of compliance to environmental and social requirements, as applicable;
- (vii) other issues or potential problems the Supplier foresees that could impact on project progress and/or effectiveness.

19.6 The Supplier shall submit to the Purchaser other (periodic) reports as specified in the SCC.

19.7 Immediate Reporting requirement

The Supplier shall inform the Project Manager immediately of any allegation, incident or accident in Project Site/s, which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Purchaser's Personnel or Supplier's Personnel. This includes, but is not limited to, any incident or accident causing fatality or serious injury; significant adverse effects or damage to private property; any cyber security incidents as **specified in the SCC**; or any allegation of SEA and/or SH. In case of SEA and/or SH, while maintaining confidentiality as appropriate, the type of allegation (sexual exploitation, sexual abuse or sexual harassment), gender and age of the person who experienced the alleged incident should be included in the information.

The Supplier, upon becoming aware of the allegation, incident or accident, shall also immediately inform the Purchaser of any such incident or accident on the

Subcontractors' or suppliers' premises relating to the Contract which has or is likely to have a significant adverse effect on the environment, the affected communities, the public, Purchaser's Personnel or Supplier's Personnel. The notification shall provide sufficient detail regarding such incidents or accidents.

The Supplier shall provide full details of such incidents or accidents to the Project Manager within the timeframe agreed with the Purchaser.

The Purchaser shall require its Subcontractors to immediately notify it of any incidents or accidents referred to in this Sub- Clause.

## **20. Subcontracting**

- 20.1 Appendix 3 (List of Approved Subcontractors) to the Contract Agreement specifies critical items of supply or services and a list of Subcontractors for each item that are considered acceptable by the Purchaser. If no Subcontractors are listed for an item, the Supplier shall prepare a list of Subcontractors it considers qualified and wishes to be added to the list for such items. The Supplier may from time to time propose additions to or deletions from any such list. The Supplier shall submit any such list or any modification to the list to the Purchaser for its approval in sufficient time so as not to impede the progress of work on the System. Submission by the Supplier, for addition of any Subcontractor not named in the Contract, shall also include the Subcontractor's declaration in accordance with Appendix 2 to the GCC- Sexual exploitation and Abuse (SEA) and/or Sexual Harassment (SH) Performance Declaration. Approval by the Purchaser of a Subcontractor(s) shall not relieve the Supplier from any of its obligations, duties, or responsibilities under the Contract.
- 20.2 The Supplier may, at its discretion, select and employ Subcontractors for such critical items from those Subcontractors listed pursuant to GCC Clause 20.1. If the Supplier wishes to employ a Subcontractor not so listed, or subcontract an item not so listed, it must seek the Purchaser's prior approval under GCC Clause 20.3.
- 20.3 For items for which pre-approved Subcontractor lists have not been specified in Appendix 3 to the Contract Agreement, the Supplier may employ such Subcontractors as it may select, provided: (i) the Supplier notifies the Purchaser in writing at least twenty-eight (28) days prior to

the proposed mobilization date for such Subcontractor, including by providing the Subcontractor's declaration in accordance with Appendix 2 to the GCC- Sexual exploitation and Abuse (SEA) and/or Sexual Harassment (SH) Performance Declaration; and (ii) by the end of this period either the Purchaser has granted its approval in writing or fails to respond. The Supplier shall not engage any Subcontractor to which the Purchaser has objected in writing prior to the end of the notice period. The absence of a written objection by the Purchaser during the above specified period shall constitute formal acceptance of the proposed Subcontractor. Except to the extent that it permits the deemed approval of the Purchaser of Subcontractors not listed in the Contract Agreement, nothing in this Clause, however, shall limit the rights and obligations of either the Purchaser or Supplier as they are specified in GCC Clauses 20.1 and 20.2, or in Appendix 3 of the Contract Agreement.

- 20.4 The Supplier shall ensure that its Subcontractors comply with the relevant ES requirements and the obligations set out in GCC Clause 9.9.

## **21. Design and Engineering**

### **21.1 Technical Specifications and Drawings**

- 21.1.1 The Supplier shall execute the basic and detailed design and the implementation activities necessary for successful installation of the System in compliance with the provisions of the Contract or, where not so specified, in accordance with good industry practice.

The Supplier shall be responsible for any discrepancies, errors or omissions in the specifications, drawings, and other technical documents that it has prepared, whether such specifications, drawings, and other documents have been approved by the Project Manager or not, provided that such discrepancies, errors, or omissions are not because of inaccurate information furnished in writing to the Supplier by or on behalf of the Purchaser.

- 21.1.2 The Supplier shall be entitled to disclaim responsibility for any design, data, drawing, specification, or other document, or any modification of such design, drawings, specification, or other documents provided or designated by or on behalf of the Purchaser, by giving a notice of such disclaimer to the Project Manager.

## 21.2 Codes and Standards

Wherever references are made in the Contract to codes and standards in accordance with which the Contract shall be executed, the edition or the revised version of such codes and standards current at the date twenty-eight (28) days prior to date of proposal submission shall apply. During Contract execution, any changes in such codes and standards shall be applied after approval by the Purchaser and shall be treated in accordance with GCC Clause 39.3.

## 21.3 Approval/Review of Controlling Technical Documents by the Project Manager

**21.3.1 Unless otherwise specified in the SCC**, there will NO Controlling Technical Documents required. However, **if the SCC specifies** Controlling Technical Documents, the Supplier shall prepare and furnish such documents for the Project Manager's approval or review.

Any part of the System covered by or related to the documents to be approved by the Project Manager shall be executed only after the Project Manager's approval of these documents.

GCC Clauses 21.3.2 through 21.3.7 shall apply to those documents requiring the Project Manager's approval, but not to those furnished to the Project Manager for its review only.

**21.3.2** Within fourteen (14) days after receipt by the Project Manager of any document requiring the Project Manager's approval in accordance with GCC Clause 21.3.1, the Project Manager shall either return one copy of the document to the Supplier with its approval endorsed on the document or shall notify the Supplier in writing of its disapproval of the document and the reasons for disapproval and the modifications that the Project Manager proposes. If the Project Manager fails to take such action within the fourteen (14) days, then the document shall be deemed to have been approved by the Project Manager.

**21.3.3** The Project Manager shall not disapprove any document except on the grounds that the document does not comply with some specified provision of the Contract or that it is contrary to good industry practice.

**21.3.4** If the Project Manager disapproves the document, the Supplier shall modify the document and resubmit it for

the Project Manager's approval in accordance with GCC Clause 21.3.2. If the Project Manager approves the document subject to modification(s), the Supplier shall make the required modification(s), and the document shall then be deemed to have been approved, subject to GCC Clause 21.3.5. The procedure set out in GCC Clauses 21.3.2 through 21.3.4 shall be repeated, as appropriate, until the Project Manager approves such documents.

21.3.5 If any dispute occurs between the Purchaser and the Supplier in connection with or arising out of the disapproval by the Project Manager of any document and/or any modification(s) to a document that cannot be settled between the parties within a reasonable period, then, in case the Contract Agreement includes and names an Adjudicator, such dispute may be referred to the Adjudicator for determination in accordance with GCC Clause 43.1 (Adjudication). If such dispute is referred to an Adjudicator, the Project Manager shall give instructions as to whether and if so, how, performance of the Contract is to proceed. The Supplier shall proceed with the Contract in accordance with the Project Manager's instructions, provided that if the Adjudicator upholds the Supplier's view on the dispute and if the Purchaser has not given notice under GCC Clause 43.1.2, then the Supplier shall be reimbursed by the Purchaser for any additional costs incurred by reason of such instructions and shall be relieved of such responsibility or liability in connection with the dispute and the execution of the instructions as the Adjudicator shall decide, and the Time for Achieving Operational Acceptance shall be extended accordingly.

21.3.6 The Project Manager's approval, with or without modification of the document furnished by the Supplier, shall not relieve the Supplier of any responsibility or liability imposed upon it by any provisions of the Contract except to the extent that any subsequent failure results from modifications required by the Project Manager or inaccurate information furnished in writing to the Supplier by or on behalf of the Purchaser.

21.3.7 The Supplier shall not depart from any approved document unless the Supplier has first submitted to the Project Manager an amended document and obtained

the Project Manager's approval of the document, pursuant to the provisions of this GCC Clause 21.3. If the Project Manager requests any change in any already approved document and/or in any document based on such an approved document, the provisions of GCC Clause 39 (Changes to the System) shall apply to such request.

**22. Procurement,  
Delivery, and  
Transport**

22.1 Subject to related Purchaser's responsibilities pursuant to GCC Clauses 10 and 14, the Supplier shall manufacture or procure and transport all the Information Technologies, Materials, and other Goods in an expeditious and orderly manner to the Project Site.

22.2 Delivery of the Information Technologies, Materials, and other Goods shall be made by the Supplier in accordance with the Technical Requirements.

22.3 Early or partial deliveries require the explicit written consent of the Purchaser, which consent shall not be unreasonably withheld.

22.4 Transportation

22.4.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during shipment. The packing, marking, and documentation within and outside the packages shall comply strictly with the Purchaser's instructions to the Supplier.

22.4.2 The Supplier will bear responsibility for and cost of transport to the Project Sites in accordance with the terms and conditions used in the specification of prices in the Price Schedules, including the terms and conditions of the associated Incoterms.

22.4.3 **Unless otherwise specified in the SCC**, the Supplier shall be free to use transportation through carriers registered in any eligible country and to obtain insurance from any eligible source country.

22.5 **Unless otherwise specified in the SCC**, the Supplier will provide the Purchaser with shipping and other documents, as specified below:

22.5.1 For Goods supplied from outside the Purchaser's Country:

Upon shipment, the Supplier shall notify the Purchaser and the insurance company contracted by the Supplier

to provide cargo insurance by cable, facsimile, electronic mail, or EDI with the full details of the shipment. The Supplier shall promptly send the following documents to the Purchaser by mail or courier, as appropriate, with a copy to the cargo insurance company:

- (a) two copies of the Supplier's invoice showing the description of the Goods, quantity, unit price, and total amount;
- (b) usual transportation documents;
- (c) insurance certificate;
- (d) certificate(s) of origin; and
- (e) estimated time and point of arrival in the Purchaser's Country and at the site.

22.5.2 For Goods supplied locally (i.e., from within the Purchaser's country):

Upon shipment, the Supplier shall notify the Purchaser by cable, facsimile, electronic mail, or EDI with the full details of the shipment. The Supplier shall promptly send the following documents to the Purchaser by mail or courier, as appropriate:

- (a) two copies of the Supplier's invoice showing the Goods' description, quantity, unit price, and total amount;
- (b) delivery note, railway receipt, or truck receipt;
- (c) certificate of insurance;
- (d) certificate(s) of origin; and
- (e) estimated time of arrival at the site.

22.6 Customs Clearance

- (a) The Purchaser will bear responsibility for, and cost of, customs clearance into the Purchaser's country in accordance the particular Incoterm(s) used for Goods supplied from outside the Purchaser's country in the Price Schedules referred to by Article 2 of the Contract Agreement.
- (b) At the request of the Purchaser, the Supplier will make available a representative or agent during the process of customs clearance in the Purchaser's country for goods supplied from outside the Purchaser's country. In the event of delays in

customs clearance that are not the fault of the Supplier:

- (i) the Supplier shall be entitled to an extension in the Time for Achieving Operational Acceptance, pursuant to GCC Clause 40;
- (ii) the Contract Price shall be adjusted to compensate the Supplier for any additional storage charges that the Supplier may incur as a result of the delay.

### **23. Product Upgrades**

- 23.1 At any point during performance of the Contract, should technological advances be introduced by the Supplier for Information Technologies originally offered by the Supplier in its proposal and still to be delivered, the Supplier shall be obligated to offer to the Purchaser the latest versions of the available Information Technologies having equal or better performance or functionality at the same or lesser unit prices, pursuant to GCC Clause 39 (Changes to the System).
- 23.2 At any point during performance of the Contract, for Information Technologies still to be delivered, the Supplier will also pass on to the Purchaser any cost reductions and additional and/or improved support and facilities that it offers to other clients of the Supplier in the Purchaser's Country, pursuant to GCC Clause 39 (Changes to the System).
- 23.3 During performance of the Contract, the Supplier shall offer to the Purchaser all new versions, releases, and updates of Standard Software, as well as related documentation and technical support services, within thirty (30) days of their availability from the Supplier to other clients of the Supplier in the Purchaser's Country, and no later than twelve (12) months after they are released in the country of origin. In no case will the prices for these Software exceed those quoted by the Supplier in the Recurrent Costs tables in its proposal.
- 23.4 **Unless otherwise specified in the SCC**, during the Warranty Period, the Supplier will provide at no additional cost to the Purchaser all new versions, releases, and updates for all Standard Software that are used in the System, within thirty (30) days of their availability from the Supplier to other clients of the Supplier in the Purchaser's country, and

no later than twelve (12) months after they are released in the country of origin of the Software.

- 23.5 The Purchaser shall introduce all new versions, releases or updates of the Software within eighteen (18) months of receipt of a production-ready copy of the new version, release, or update, provided that the new version, release, or update does not adversely affect System operation or performance or require extensive reworking of the System. In cases where the new version, release, or update adversely affects System operation or performance, or requires extensive reworking of the System, the Supplier shall continue to support and maintain the version or release previously in operation for as long as necessary to allow introduction of the new version, release, or update. In no case shall the Supplier stop supporting or maintaining a version or release of the Software less than twenty four (24) months after the Purchaser receives a production-ready copy of a subsequent version, release, or update. The Purchaser shall use all reasonable endeavors to implement any new version, release, or update as soon as practicable, subject to the twenty-four-month-long stop date.

**24. Implementation,  
Installation, and  
Other Services**

- 24.1 The Supplier shall provide all Services specified in the Contract and Agreed Project Plan in accordance with the highest standards of professional competence and integrity.
- 24.2 Prices charged by the Supplier for Services, if not included in the Contract, shall be agreed upon in advance by the parties (including, but not restricted to, any prices submitted by the Supplier in the Recurrent Cost Schedules of its proposal) and shall not exceed the prevailing rates charged by the Supplier to other purchasers in the Purchaser's Country for similar services.

**25. Inspections and  
Tests**

- 25.1 The Purchaser or its representative shall have the right to inspect and/or test any components of the System, as specified in the Technical Requirements, to confirm their good working order and/or conformity to the Contract at the point of delivery and/or at the Project Site.
- 25.2 The Purchaser or its representative shall be entitled to attend any such inspections and/or tests of the components, provided that the Purchaser shall bear all costs and expenses incurred in connection with such attendance, including but not limited to all inspection agent fees, travel, and related expenses.

- 25.3 Should the inspected or tested components fail to conform to the Contract, the Purchaser may reject the component(s), and the Supplier shall either replace the rejected component(s), or make alterations as necessary so that it meets the Contract requirements free of cost to the Purchaser.
- 25.4 The Project Manager may require the Supplier to carry out any inspection and/or test not specified in the Contract, provided that the Supplier's reasonable costs and expenses incurred in the carrying out of such inspection and/or test shall be added to the Contract Price. Further, if such inspection and/or test impedes the progress of work on the System and/or the Supplier's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Achieving Operational Acceptance and the other obligations so affected.
- 25.5 If any dispute shall arise between the parties in connection with or caused by an inspection and/or with regard to any component to be incorporated in the System that cannot be settled amicably between the parties within a reasonable period of time, either party may invoke the process pursuant to GCC Clause 43 (Settlement of Disputes), starting with referral of the matter to the Adjudicator in case an Adjudicator is included and named in the Contract Agreement.

**26. Installation of the System**

- 26.1 As soon as the System, or any Subsystem, has, in the opinion of the Supplier, been delivered, Pre-commissioned, and made ready for Commissioning and Operational Acceptance Testing in accordance with the Technical Requirements, the SCC and the Agreed Project Plan, the Supplier shall so notify the Purchaser in writing.
- 26.2 The Project Manager shall, within fourteen (14) days after receipt of the Supplier's notice under GCC Clause 26.1, either issue an Installation Certificate in the form specified in the Sample Contractual Forms Section in the request for proposals document, stating that the System, or major component or Subsystem (if Acceptance by major component or Subsystem is specified pursuant to the SCC for GCC Clause 27.2.1), has achieved Installation by the date of the Supplier's notice under GCC Clause 26.1, or notify the Supplier in writing of any defects and/or deficiencies, including, but not limited to, defects or deficiencies in the interoperability or integration of the various components and/or Subsystems making up the

System. The Supplier shall use all reasonable endeavors to promptly remedy any defect and/or deficiencies that the Project Manager has notified the Supplier of. The Supplier shall then promptly carry out retesting of the System or Subsystem and, when in the Supplier's opinion the System or Subsystem is ready for Commissioning and Operational Acceptance Testing, notify the Purchaser in writing, in accordance with GCC Clause 26.1. The procedure set out in this GCC Clause 26.2 shall be repeated, as necessary, until an Installation Certificate is issued.

- 26.3 If the Project Manager fails to issue the Installation Certificate and fails to inform the Supplier of any defects and/or deficiencies within fourteen (14) days after receipt of the Supplier's notice under GCC Clause 26.1, or if the Purchaser puts the System or a Subsystem into production operation, then the System (or Subsystem) shall be deemed to have achieved successful Installation as of the date of the Supplier's notice or repeated notice, or when the Purchaser put the System into production operation, as the case may be.

## **27. Commissioning and Operational Acceptance**

### **27.1 Commissioning**

27.1.1 Commissioning of the System (or Subsystem if specified pursuant to the SCC for GCC Clause 27.2.1) shall be commenced by the Supplier:

- (a) immediately after the Installation Certificate is issued by the Project Manager, pursuant to GCC Clause 26.2; or
- (b) as otherwise specified in the Technical Requirement or the Agreed Project Plan; or
- (c) immediately after Installation is deemed to have occurred, under GCC Clause 26.3.

27.1.2 The Purchaser shall supply the operating and technical personnel and all materials and information reasonably required to enable the Supplier to carry out its obligations with respect to Commissioning.

Production use of the System or Subsystem(s) shall not commence prior to the start of formal Operational Acceptance Testing.

### **27.2 Operational Acceptance Tests**

27.2.1 The Operational Acceptance Tests (and repeats of such tests) shall be the primary responsibility of the

Purchaser (in accordance with GCC Clause 10.9), but shall be conducted with the full cooperation of the Supplier during Commissioning of the System (or major components or Subsystem[s]), to ascertain whether the System (or major component or Subsystem[s]) conforms to the Technical Requirements and meets the standard of performance quoted in the Supplier's proposal, including, but not restricted to, the functional and technical performance requirements. **Unless otherwise specified in the SCC**, the Operational Acceptance Tests during Commissioning will be conducted as specified in the Technical Requirements and/or the Agreed Project Plan.

At the Purchaser's discretion, Operational Acceptance Tests may also be performed on replacement Goods, upgrades and new version releases, and Goods that are added or field-modified after Operational Acceptance of the System.

27.2.2 If for reasons attributable to the Purchaser, the Operational Acceptance Test of the System (or Subsystem[s] or major components, pursuant to the SCC for GCC Clause 27.2.1) cannot be successfully completed within ninety (90) days from the date of Installation or any other period agreed upon in writing by the Purchaser and the Supplier, the Supplier shall be deemed to have fulfilled its obligations with respect to the technical and functional aspects of the Technical Specifications, SCC and/or the Agreed Project Plan, and GCC Clause 28.2 and 28.3 shall not apply.

### 27.3 Operational Acceptance

27.3.1 Subject to GCC Clause 27.4 (Partial Acceptance) below, Operational Acceptance shall occur in respect of the System, when

- (a) the Operational Acceptance Tests, as specified in the Technical Requirements, and/or SCC and/or the Agreed Project Plan have been successfully completed; or
- (b) the Operational Acceptance Tests have not been successfully completed or have not been carried out for reasons that are attributable to the Purchaser within the period from the date of Installation or any other agreed-upon period as specified in GCC Clause 27.2.2 above; or

- (c) the Purchaser has put the System into production or use for sixty (60) consecutive days. If the System is put into production or use in this manner, the Supplier shall notify the Purchaser and document such use.

27.3.2 At any time after any of the events set out in GCC Clause 27.3.1 have occurred, the Supplier may give a notice to the Project Manager requesting the issue of an Operational Acceptance Certificate.

27.3.3 After consultation with the Purchaser, and within fourteen (14) days after receipt of the Supplier's notice, the Project Manager shall:

- (a) issue an Operational Acceptance Certificate; or
- (b) notify the Supplier in writing of any defect or deficiencies or other reason for the failure of the Operational Acceptance Tests; or
- (c) issue the Operational Acceptance Certificate, if the situation covered by GCC Clause 27.3.1 (b) arises.

27.3.4 The Supplier shall use all reasonable endeavors to promptly remedy any defect and/or deficiencies and/or other reasons for the failure of the Operational Acceptance Test that the Project Manager has notified the Supplier of. Once such remedies have been made by the Supplier, the Supplier shall notify the Purchaser, and the Purchaser, with the full cooperation of the Supplier, shall use all reasonable endeavors to promptly carry out retesting of the System or Subsystem. Upon the successful conclusion of the Operational Acceptance Tests, the Supplier shall notify the Purchaser of its request for Operational Acceptance Certification, in accordance with GCC Clause 27.3.3. The Purchaser shall then issue to the Supplier the Operational Acceptance Certification in accordance with GCC Clause 27.3.3 (a), or shall notify the Supplier of further defects, deficiencies, or other reasons for the failure of the Operational Acceptance Test. The procedure set out in this GCC Clause 27.3.4 shall be repeated, as necessary, until an Operational Acceptance Certificate is issued.

27.3.5 If the System or Subsystem fails to pass the Operational Acceptance Test(s) in accordance with GCC Clause 27.2, then either:

- (a) the Purchaser may consider terminating the Contract, pursuant to GCC Clause 41.2.2;

or

- (b) if the failure to achieve Operational Acceptance within the specified time period is a result of the failure of the Purchaser to fulfill its obligations under the Contract, then the Supplier shall be deemed to have fulfilled its obligations with respect to the relevant technical and functional aspects of the Contract, and GCC Clauses 30.3 and 30.4 shall not apply.

27.3.6 If within fourteen (14) days after receipt of the Supplier's notice the Project Manager fails to issue the Operational Acceptance Certificate or fails to inform the Supplier in writing of the justifiable reasons why the Project Manager has not issued the Operational Acceptance Certificate, the System or Subsystem shall be deemed to have been accepted as of the date of the Supplier's said notice.

#### 27.4 Partial Acceptance

27.4.1 If so specified in the SCC for GCC Clause 27.2.1, Installation and Commissioning shall be carried out individually for each identified major component or Subsystem(s) of the System. In this event, the provisions in the Contract relating to Installation and Commissioning, including the Operational Acceptance Test, shall apply to each such major component or Subsystem individually, and Operational Acceptance Certificate(s) shall be issued accordingly for each such major component or Subsystem of the System, subject to the limitations contained in GCC Clause 27.4.2.

27.4.2 The issuance of Operational Acceptance Certificates for individual major components or Subsystems pursuant to GCC Clause 27.4.1 shall not relieve the Supplier of its obligation to obtain an Operational Acceptance Certificate for the System as an integrated whole (if so specified in the SCC for GCC Clauses 12.1 and 27.2.1) once all major components and Subsystems have been supplied, installed, tested, and commissioned.

27.4.3 In the case of minor components for the System that by their nature do not require Commissioning or an Operational Acceptance Test (e.g., minor fittings, furnishings or site works, etc.), the Project Manager

shall issue an Operational Acceptance Certificate within fourteen (14) days after the fittings and/or furnishings have been delivered and/or installed or the site works have been completed. The Supplier shall, however, use all reasonable endeavors to promptly remedy any defects or deficiencies in such minor components detected by the Purchaser or Supplier.

## **F. GUARANTEES AND LIABILITIES**

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### **28. Operational Acceptance Time Guarantee**

- 28.1 The Supplier guarantees that it shall complete the supply, Installation, Commissioning, and achieve Operational Acceptance of the System (or Subsystems, pursuant to the SCC for GCC Clause 27.2.1) within the time periods specified in the Implementation Schedule and/or the Agreed Project Plan pursuant to GCC Clause 8.2, or within such extended time to which the Supplier shall be entitled under GCC Clause 40 (Extension of Time for Achieving Operational Acceptance).
- 28.2 **Unless otherwise specified in the SCC**, if the Supplier fails to supply, install, commission, and achieve Operational Acceptance of the System (or Subsystems pursuant to the SCC for GCC Clause 27.2.1) within the time for achieving Operational Acceptance specified in the Implementation Schedule or the Agreed Project Plan, or any extension of the time for achieving Operational Acceptance previously granted under GCC Clause 40 (Extension of Time for Achieving Operational Acceptance), the Supplier shall pay to the Purchaser liquidated damages at the rate of one half of one percent per week as a percentage of the Contract Price (exclusive of Recurrent Costs if any), or the relevant part of the Contract Price if a Subsystem has not achieved Operational Acceptance. The aggregate amount of such liquidated damages shall in no event exceed the amount of ten (10) percent of the Contract Price (exclusive of Recurrent Costs if any). Once the Maximum is reached, the Purchaser may consider termination of the Contract, pursuant to GCC Clause 41.2.2.
- 28.3 **Unless otherwise specified in the SCC**, liquidated damages payable under GCC Clause 28.2 shall apply only to the failure to achieve Operational Acceptance of the System (and Subsystems) as specified in the Implementation Schedule and/or Agreed Project Plan. This Clause 28.3 shall not limit, however, any other rights or

remedies the Purchaser may have under the Contract for other delays.

- 28.4 If liquidated damages are claimed by the Purchaser for the System (or Subsystem), the Supplier shall have no further liability whatsoever to the Purchaser in respect to the Operational Acceptance time guarantee for the System (or Subsystem). However, the payment of liquidated damages shall not in any way relieve the Supplier from any of its obligations to complete the System or from any other of its obligations and liabilities under the Contract.

## 29. Defect Liability

- 29.1 The Supplier warrants that the System, including all Information Technologies, Materials, and other Goods supplied and Services provided, shall be free from defects in the design, engineering, Materials, and workmanship that prevent the System and/or any of its components from fulfilling the Technical Requirements or that limit in a material fashion the performance, reliability, or extensibility of the System and/or Subsystems. **Unless otherwise specified in the SCC**, there will be NO exceptions and/or limitations to this warranty with respect to Software (or categories of Software). Commercial warranty provisions of products supplied under the Contract shall apply to the extent that they do not conflict with the provisions of this Contract.
- 29.2 The Supplier also warrants that the Information Technologies, Materials, and other Goods supplied under the Contract are new, unused, and incorporate all recent improvements in design that materially affect the System's or Subsystem's ability to fulfill the Technical Requirements.
- 29.3 **Unless otherwise specified in the SCC**, the Supplier warrants that: (i) all Goods components to be incorporated into the System form part of the Supplier's and/or Subcontractor's current product lines, and (ii) they have been previously released to the market.
- 29.4 **Unless otherwise specified in the SCC**, the Warranty Period shall commence from the date of Operational Acceptance of the System (or of any major component or Subsystem for which separate Operational Acceptance is provided for in the Contract) and shall extend for thirty-six (36) months.
- 29.5 If during the Warranty Period any defect as described in GCC Clause 29.1 should be found in the design,

engineering, Materials, and workmanship of the Information Technologies and other Goods supplied or of the Services provided by the Supplier, the Supplier shall promptly, in consultation and agreement with the Purchaser regarding appropriate remedying of the defects, and at its sole cost, repair, replace, or otherwise make good (as the Supplier shall, at its discretion, determine) such defect as well as any damage to the System caused by such defect. Any defective Information Technologies or other Goods that have been replaced by the Supplier shall remain the property of the Supplier.

- 29.6 The Supplier shall not be responsible for the repair, replacement, or making good of any defect, or of any damage to the System arising out of or resulting from any of the following causes:
- (a) improper operation or maintenance of the System by the Purchaser;
  - (b) normal wear and tear;
  - (c) use of the System with items not supplied by the Supplier, unless otherwise identified in the Technical Requirements, or approved by the Supplier; or
  - (d) modifications made to the System by the Purchaser, or a third party, not approved by the Supplier.
- 29.7 The Supplier's obligations under this GCC Clause 29 shall not apply to:
- (a) any materials that are normally consumed in operation or have a normal life shorter than the Warranty Period; or
  - (b) any designs, specifications, or other data designed, supplied, or specified by or on behalf of the Purchaser or any matters for which the Supplier has disclaimed responsibility, in accordance with GCC Clause 21.1.2.
- 29.8 The Purchaser shall give the Supplier a notice promptly following the discovery of such defect, stating the nature of any such defect together with all available evidence. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect any such defect. The Purchaser shall afford the Supplier all necessary access to the System and the site to enable the Supplier to perform its obligations under this GCC Clause 29.

- 29.9 The Supplier may, with the consent of the Purchaser, remove from the site any Information Technologies and other Goods that are defective, if the nature of the defect, and/or any damage to the System caused by the defect, is such that repairs cannot be expeditiously carried out at the site. If the repair, replacement, or making good is of such a character that it may affect the efficiency of the System, the Purchaser may give the Supplier notice requiring that tests of the defective part be made by the Supplier immediately upon completion of such remedial work, whereupon the Supplier shall carry out such tests.

If such part fails the tests, the Supplier shall carry out further repair, replacement, or making good (as the case may be) until that part of the System passes such tests. The tests shall be agreed upon by the Purchaser and the Supplier.

- 29.10 **Unless otherwise specified in the SCC**, the response times and repair/replacement times for Warranty Defect Repair are specified in the Technical Requirements. Nevertheless, if the Supplier fails to commence the work necessary to remedy such defect or any damage to the System caused by such defect within two weeks the Purchaser may, following notice to the Supplier, proceed to do such work or contract a third party (or parties) to do such work, and the reasonable costs incurred by the Purchaser in connection with such work shall be paid to the Purchaser by the Supplier or may be deducted by the Purchaser from any monies due the Supplier or claimed under the Performance Security.
- 29.11 If the System or Subsystem cannot be used by reason of such defect and/or making good of such defect, the Warranty Period for the System shall be extended by a period equal to the period during which the System or Subsystem could not be used by the Purchaser because of such defect and/or making good of such defect.
- 29.12 Items substituted for defective parts of the System during the Warranty Period shall be covered by the Defect Liability Warranty for the remainder of the Warranty Period applicable for the part replaced or three (3) months, whichever is greater. For reasons of information security, the Purchaser may choose to retain physical possession of any replaced defective information storage devices.
- 29.13 At the request of the Purchaser and without prejudice to any other rights and remedies that the Purchaser may have

against the Supplier under the Contract, the Supplier will offer all possible assistance to the Purchaser to seek warranty services or remedial action from any subcontracted third-party producers or licensor of Goods included in the System, including without limitation assignment or transfer in favor of the Purchaser of the benefit of any warranties given by such producers or licensors to the Supplier.

**30. Functional  
Guarantees**

- 30.1 The Supplier guarantees that, once the Operational Acceptance Certificate(s) has been issued, the System represents a complete, integrated solution to the Purchaser's requirements set forth in the Technical Requirements and it conforms to all other aspects of the Contract. The Supplier acknowledges that GCC Clause 27 regarding Commissioning and Operational Acceptance governs how technical conformance of the System to the Contract requirements will be determined.
- 30.2 If, for reasons attributable to the Supplier, the System does not conform to the Technical Requirements or does not conform to all other aspects of the Contract, the Supplier shall at its cost and expense make such changes, modifications, and/or additions to the System as may be necessary to conform to the Technical Requirements and meet all functional and performance standards. The Supplier shall notify the Purchaser upon completion of the necessary changes, modifications, and/or additions and shall request the Purchaser to repeat the Operational Acceptance Tests until the System achieves Operational Acceptance.
- 30.3 If the System (or Subsystem[s]) fails to achieve Operational Acceptance, the Purchaser may consider termination of the Contract, pursuant to GCC Clause 41.2.2, and forfeiture of the Supplier's Performance Security in accordance with GCC Clause 13.3 in compensation for the extra costs and delays likely to result from this failure.

**31. Intellectual  
Property Rights  
Warranty**

- 31.1 The Supplier hereby represents and warrants that:
- (a) the System as supplied, installed, tested, and accepted;
  - (b) use of the System in accordance with the Contract; and

- (c) copying of the Software and Materials provided to the Purchaser in accordance with the Contract

do not and will not infringe any Intellectual Property Rights held by any third party and that it has all necessary rights or at its sole expense shall have secured in writing all transfers of rights and other consents necessary to make the assignments, licenses, and other transfers of Intellectual Property Rights and the warranties set forth in the Contract, and for the Purchaser to own or exercise all Intellectual Property Rights as provided in the Contract. Without limitation, the Supplier shall secure all necessary written agreements, consents, and transfers of rights from its employees and other persons or entities whose services are used for development of the System.

### **32. Intellectual Property Rights Indemnity**

- 32.1 The Supplier shall indemnify and hold harmless the Purchaser and its employees and officers from and against any and all losses, liabilities, and costs (including losses, liabilities, and costs incurred in defending a claim alleging such a liability), that the Purchaser or its employees or officers may suffer as a result of any infringement or alleged infringement of any Intellectual Property Rights by reason of:
  - (a) installation of the System by the Supplier or the use of the System, including the Materials, in the country where the site is located;
  - (b) copying of the Software and Materials provided the Supplier in accordance with the Agreement; and
  - (c) sale of the products produced by the System in any country, except to the extent that such losses, liabilities, and costs arise as a result of the Purchaser's breach of GCC Clause 32.2.
- 32.2 Such indemnity shall not cover any use of the System, including the Materials, other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the System, or any products of the System produced thereby in association or combination with any other goods or services not supplied by the Supplier, where the infringement arises because of such association or combination and not because of use of the System in its own right.

32.3 Such indemnities shall also not apply if any claim of infringement:

- (a) is asserted by a parent, subsidiary, or affiliate of the Purchaser's organization;
- (b) is a direct result of a design mandated by the Purchaser's Technical Requirements and the possibility of such infringement was duly noted in the Supplier's Proposal; or
- (c) results from the alteration of the System, including the Materials, by the Purchaser or any persons other than the Supplier or a person authorized by the Supplier.

32.4 If any proceedings are brought or any claim is made against the Purchaser arising out of the matters referred to in GCC Clause 32.1, the Purchaser shall promptly give the Supplier notice of such proceedings or claims, and the Supplier may at its own expense and in the Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.

If the Supplier fails to notify the Purchaser within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser shall be free to conduct the same on its own behalf. Unless the Supplier has so failed to notify the Purchaser within the twenty-eight (28) days, the Purchaser shall make no admission that may be prejudicial to the defense of any such proceedings or claim. The Purchaser shall, at the Supplier's request, afford all available assistance to the Supplier in conducting such proceedings or claim and shall be reimbursed by the Supplier for all reasonable expenses incurred in so doing.

32.5 The Purchaser shall indemnify and hold harmless the Supplier and its employees, officers, and Subcontractors from and against any and all losses, liabilities, and costs (including losses, liabilities, and costs incurred in defending a claim alleging such a liability) that the Supplier or its employees, officers, or Subcontractors may suffer as a result of any infringement or alleged infringement of any Intellectual Property Rights arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided to the Supplier in connection with this Contract by the Purchaser or any persons (other than the Supplier) contracted by the

Purchaser, except to the extent that such losses, liabilities, and costs arise as a result of the Supplier's breach of GCC Clause 32.8.

32.6 Such indemnity shall not cover

- (a) any use of the design, data, drawing, specification, or other documents or materials, other than for the purpose indicated by or to be reasonably inferred from the Contract;
- (b) any infringement resulting from the use of the design, data, drawing, specification, or other documents or materials, or any products produced thereby, in association or combination with any other Goods or Services not provided by the Purchaser or any other person contracted by the Purchaser, where the infringement arises because of such association or combination and not because of the use of the design, data, drawing, specification, or other documents or materials in its own right.

32.7 Such indemnities shall also not apply:

- (a) if any claim of infringement is asserted by a parent, subsidiary, or affiliate of the Supplier's organization;
- (b) to the extent that any claim of infringement is caused by the alteration, by the Supplier, or any persons contracted by the Supplier, of the design, data, drawing, specification, or other documents or materials provided to the Supplier by the Purchaser or any persons contracted by the Purchaser.

32.8 If any proceedings are brought or any claim is made against the Supplier arising out of the matters referred to in GCC Clause 32.5, the Supplier shall promptly give the Purchaser notice of such proceedings or claims, and the Purchaser may at its own expense and in the Supplier's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. If the Purchaser fails to notify the Supplier within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Supplier shall be free to conduct the same on its own behalf. Unless the Purchaser has so failed to notify the Supplier within the twenty-eight (28) days, the Supplier shall make no admission that may be prejudicial to the defense of any such proceedings or claim. The Supplier shall, at the Purchaser's request, afford all available assistance to the Purchaser in

conducting such proceedings or claim and shall be reimbursed by the Purchaser for all reasonable expenses incurred in so doing.

**33. Limitation of Liability**

33.1 Provided the following does not exclude or limit any liabilities of either party in ways not permitted by applicable law:

- (a) the Supplier shall not be liable to the Purchaser, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Supplier to pay liquidated damages to the Purchaser; and
- (b) the aggregate liability of the Supplier to the Purchaser, whether under the Contract, in tort or otherwise, shall not exceed the total Contract Price, provided that this limitation shall not apply to any obligation of the Supplier to indemnify the Purchaser with respect to intellectual property rights infringement.

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**G. RISK DISTRIBUTION**

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**34. Transfer of Ownership**

34.1 With the exception of Software and Materials, the ownership of the Information Technologies and other Goods shall be transferred to the Purchaser at the time of Delivery or otherwise under terms that may be agreed upon and specified in the Contract Agreement.

34.2 Ownership and the terms of usage of the Software and Materials supplied under the Contract shall be governed by GCC Clause 15 (Copyright) Clause 16 (Software License Agreements), and any elaboration in the Technical Requirements.

34.3 Ownership of the Supplier's Equipment used by the Supplier and its Subcontractors in connection with the Contract shall remain with the Supplier or its Subcontractors.

**35. Care of the System**

35.1 The Purchaser shall become responsible for the care and custody of the System or Subsystems upon their Delivery. The Purchaser shall make good at its own cost any loss or damage that may occur to the System or Subsystems from

any cause from the date of Delivery until the date of Operational Acceptance of the System or Subsystems, pursuant to GCC Clause 27 (Commissioning and Operational Acceptance), excepting such loss or damage arising from acts or omissions of the Supplier, its employees, or subcontractors.

35.2 If any loss or damage occurs to the System or any part of the System by reason of:

- (a) (insofar as they relate to the country where the Project Site is located) nuclear reaction, nuclear radiation, radioactive contamination, a pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced Supplier could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance taken out under GCC Clause 37;
- (b) any use not in accordance with the Contract, by the Purchaser or any third party;
- (c) any use of or reliance upon any design, data, or specification provided or designated by or on behalf of the Purchaser, or any such matter for which the Supplier has disclaimed responsibility in accordance with GCC Clause 21.1.2,

the Purchaser shall pay to the Supplier all sums payable in respect of the System or Subsystems that have achieved Operational Acceptance, notwithstanding that the same be lost, destroyed, or damaged. If the Purchaser requests the Supplier in writing to make good any loss or damage to the System thereby occasioned, the Supplier shall make good the same at the cost of the Purchaser in accordance with GCC Clause 39. If the Purchaser does not request the Supplier in writing to make good any loss or damage to the System thereby occasioned, the Purchaser shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the System thereby lost, destroyed, or damaged, or, where the loss or damage affects a substantial part of the System, the Purchaser shall terminate the Contract pursuant to GCC Clause 41.1.

35.3 The Purchaser shall be liable for any loss of or damage to any Supplier's Equipment which the Purchaser has

- authorized to locate within the Purchaser's premises for use in fulfillment of Supplier's obligations under the Contract, except where such loss or damage arises from acts or omissions of the Supplier, its employees, or subcontractors.
- 36. Loss of or Damage to Property; Accident or Injury to Workers; Indemnification**
- 36.1 The Supplier and each and every Subcontractor shall abide by the job safety, insurance, customs, and immigration measures prevalent and laws in force in the Purchaser's Country.
- 36.2 Subject to GCC Clause 36.3, the Supplier shall indemnify and hold harmless the Purchaser and its employees and officers from and against any and all losses, liabilities and costs (including losses, liabilities, and costs incurred in defending a claim alleging such a liability) that the Purchaser or its employees or officers may suffer as a result of the death or injury of any person or loss of or damage to any property (other than the System, whether accepted or not) arising in connection with the supply, installation, testing, and Commissioning of the System and by reason of the negligence of the Supplier or its Subcontractors, or their employees, officers or agents, except any injury, death, or property damage caused by the negligence of the Purchaser, its contractors, employees, officers, or agents.
- 36.3 If any proceedings are brought or any claim is made against the Purchaser that might subject the Supplier to liability under GCC Clause 36.2, the Purchaser shall promptly give the Supplier notice of such proceedings or claims, and the Supplier may at its own expense and in the Purchaser's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. If the Supplier fails to notify the Purchaser within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Purchaser shall be free to conduct the same on its own behalf. Unless the Supplier has so failed to notify the Purchaser within the twenty-eight (28) day period, the Purchaser shall make no admission that may be prejudicial to the defense of any such proceedings or claim. The Purchaser shall, at the Supplier's request, afford all available assistance to the Supplier in conducting such proceedings or claim and shall be reimbursed by the Supplier for all reasonable expenses incurred in so doing.
- 36.4 The Purchaser shall indemnify and hold harmless the Supplier and its employees, officers, and Subcontractors from any and all losses, liabilities, and costs (including

losses, liabilities, and costs incurred in defending a claim alleging such a liability) that the Supplier or its employees, officers, or Subcontractors may suffer as a result of the death or personal injury of any person or loss of or damage to property of the Purchaser, other than the System not yet achieving Operational Acceptance, that is caused by fire, explosion, or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 37 (Insurances), provided that such fire, explosion, or other perils were not caused by any act or failure of the Supplier.

- 36.5 If any proceedings are brought or any claim is made against the Supplier that might subject the Purchaser to liability under GCC Clause 36.4, the Supplier shall promptly give the Purchaser notice of such proceedings or claims, and the Purchaser may at its own expense and in the Supplier's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim. If the Purchaser fails to notify the Supplier within twenty-eight (28) days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Supplier shall be free to conduct the same on its own behalf. Unless the Purchaser has so failed to notify the Supplier within the twenty-eight (28) days, the Supplier shall make no admission that may be prejudicial to the defense of any such proceedings or claim. The Supplier shall, at the Purchaser's request, afford all available assistance to the Purchaser in conducting such proceedings or claim and shall be reimbursed by the Purchaser for all reasonable expenses incurred in so doing.
- 36.6 The party entitled to the benefit of an indemnity under this GCC Clause 36 shall take all reasonable measures to mitigate any loss or damage that has occurred. If the party fails to take such measures, the other party's liabilities shall be correspondingly reduced.

### **37. Insurances**

- 37.1 The Supplier shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurance set forth below. The identity of the insurers and the form of the policies shall be subject to the approval of the Purchaser, who should not unreasonably withhold such approval.

#### **(a) Cargo Insurance During Transport**

as applicable, 110 percent of the price of the Information Technologies and other Goods in a freely convertible currency, covering the Goods from physical loss or damage during shipment through receipt at the Project Site.

(b) Installation “All Risks” Insurance

as applicable, 110 percent of the price of the Information Technologies and other Goods covering the Goods at the site from all risks of physical loss or damage (excluding only perils commonly excluded under “all risks” insurance policies of this type by reputable insurers) occurring prior to Operational Acceptance of the System.

(c) Third-Party Liability Insurance

On terms as **specified in the SCC**, covering bodily injury or death suffered by third parties (including the Purchaser’s personnel) and loss of or damage to property (including the Purchaser’s property and any Subsystems that have been accepted by the Purchaser) occurring in connection with the supply and installation of the Information System.

(d) Automobile Liability Insurance

In accordance with the statutory requirements prevailing in the Purchaser’s Country, covering use of all vehicles used by the Supplier or its Subcontractors (whether or not owned by them) in connection with the execution of the Contract.

(e) Other Insurance (if any), as **specified in the SCC**.

37.2 The Purchaser shall be named as co-insured under all insurance policies taken out by the Supplier pursuant to GCC Clause 37.1, except for the Third-Party Liability, and the Supplier’s Subcontractors shall be named as co-insured under all insurance policies taken out by the Supplier pursuant to GCC Clause 37.1 except for Cargo Insurance During Transport. All insurer’s rights of subrogation against such co-insured for losses or claims arising out of the performance of the Contract shall be waived under such policies.

37.3 The Supplier shall deliver to the Purchaser certificates of insurance (or copies of the insurance policies) as evidence that the required policies are in full force and effect.

- 37.4 The Supplier shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Supplier.
- 37.5 If the Supplier fails to take out and/or maintain in effect the insurance referred to in GCC Clause 37.1, the Purchaser may take out and maintain in effect any such insurance and may from time to time deduct from any amount due the Supplier under the Contract any premium that the Purchaser shall have paid to the insurer or may otherwise recover such amount as a debt due from the Supplier.
- 37.6 Unless otherwise provided in the Contract, the Supplier shall prepare and conduct all and any claims made under the policies affected by it pursuant to this GCC Clause 37, and all monies payable by any insurers shall be paid to the Supplier. The Purchaser shall give to the Supplier all such reasonable assistance as may be required by the Supplier in connection with any claim under the relevant insurance policies. With respect to insurance claims in which the Purchaser's interest is involved, the Supplier shall not give any release or make any compromise with the insurer without the prior written consent of the Purchaser. With respect to insurance claims in which the Supplier's interest is involved, the Purchaser shall not give any release or make any compromise with the insurer without the prior written consent of the Supplier.
- 38. Force Majeure**
- 38.1 "Force Majeure" shall mean any event beyond the reasonable control of the Purchaser or of the Supplier, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected and shall include, without limitation, the following:
- (a) war, hostilities, or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy, and civil war;
  - (b) rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, conspiracy, riot, civil commotion, and terrorist acts;
  - (c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or

- ruler, or any other act or failure to act of any local state or national government authority;
- (d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine, and plague;
  - (e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves, or other natural or physical disaster;
  - (f) failure, by the Supplier, to obtain the necessary export permit(s) from the governments of the Country(s) of Origin of the Information Technologies or other Goods, or Supplier's Equipment provided that the Supplier has made all reasonable efforts to obtain the required export permit(s), including the exercise of due diligence in determining the eligibility of the System and all of its components for receipt of the necessary export permits.
- 38.2 If either party is prevented, hindered, or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances of the event of Force Majeure within fourteen (14) days after the occurrence of such event.
- 38.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered, or delayed. The Time for Achieving Operational Acceptance shall be extended in accordance with GCC Clause 40 (Extension of Time for Achieving Operational Acceptance).
- 38.4 The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect of the event of Force Majeure upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either party's right to terminate the Contract under GCC Clause 38.6.

- 38.5 No delay or nonperformance by either party to this Contract caused by the occurrence of any event of Force Majeure shall:
- (a) constitute a default or breach of the Contract;
  - (b) (subject to GCC Clauses 35.2, 38.3, and 38.4) give rise to any claim for damages or additional cost or expense occasioned by the delay or nonperformance, if, and to the extent that, such delay or nonperformance is caused by the occurrence of an event of Force Majeure.
- 38.6 If the performance of the Contract is substantially prevented, hindered, or delayed for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of one or more events of Force Majeure during the time period covered by the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which, either party may terminate the Contract by giving a notice to the other.
- 38.7 In the event of termination pursuant to GCC Clause 38.6, the rights and obligations of the Purchaser and the Supplier shall be as specified in GCC Clauses 41.1.2 and 41.1.3.
- 38.8 Notwithstanding GCC Clause 38.5, Force Majeure shall not apply to any obligation of the Purchaser to make payments to the Supplier under this Contract.

## **H. CHANGE IN CONTRACT ELEMENTS**

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### **39. Changes to the System**

#### **39.1 Introducing a Change**

- 39.1.1 Subject to GCC Clauses 39.2.5 and 39.2.7, the Purchaser shall have the right to propose, and subsequently require, the Project Manager to order the Supplier from time to time during the performance of the Contract to make any change, modification, addition, or deletion to, in, or from the System (interchangeably called “Change”), provided that such Change falls within the general scope of the System, does not constitute unrelated work, and is technically practicable, taking into account both the state of advancement of the System and the technical compatibility of the Change envisaged with the nature of the System as originally specified in the Contract.

A Change may involve, but is not restricted to, the substitution of updated Information Technologies and

related Services in accordance with GCC Clause 23 (Product Upgrades).

- 39.1.2 The Supplier may from time to time during its performance of the Contract propose to the Purchaser (with a copy to the Project Manager) any Change that the Supplier considers necessary or desirable to improve the quality or efficiency of the System. The Purchaser may at its discretion approve or reject any Change proposed by the Supplier.
  - 39.1.3 Notwithstanding GCC Clauses 39.1.1 and 39.1.2, no change made necessary because of any default of the Supplier in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Achieving Operational Acceptance.
  - 39.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Clauses 39.2 and 39.3, and further details and sample forms are provided in the Sample Contractual Forms Section in the request for proposals document.
  - 39.1.5 Moreover, the Purchaser and Supplier will agree, during development of the Project Plan, to a date prior to the scheduled date for Operational Acceptance, after which the Technical Requirements for the System shall be “frozen.” Any Change initiated after this time will be dealt with after Operational Acceptance.
- 39.2 Changes Originating from Purchaser
- 39.2.1 If the Purchaser proposes a Change pursuant to GCC Clauses 39.1.1, it shall send to the Supplier a “Request for Change Proposal,” requiring the Supplier to prepare and furnish to the Project Manager as soon as reasonably practicable a “Change Proposal,” which shall include the following:
    - (a) brief description of the Change;
    - (b) impact on the Time for Achieving Operational Acceptance;
    - (c) detailed estimated cost of the Change;
    - (d) effect on Functional Guarantees (if any);
    - (e) effect on any other provisions of the Contract; and

- (f) any additional documents as **specified in the SCC**.
- 39.2.2 Prior to preparing and submitting the “Change Proposal,” the Supplier shall submit to the Project Manager a “Change Estimate Proposal,” which shall be an estimate of the cost of preparing the Change Proposal, plus a first approximation of the suggested approach and cost for implementing the changes. Upon receipt of the Supplier’s Change Estimate Proposal, the Purchaser shall do one of the following:
- (a) accept the Supplier’s estimate with instructions to the Supplier to proceed with the preparation of the Change Proposal;
  - (b) advise the Supplier of any part of its Change Estimate Proposal that is unacceptable and request the Supplier to review its estimate;
  - (c) advise the Supplier that the Purchaser does not intend to proceed with the Change.
- 39.2.3 Upon receipt of the Purchaser’s instruction to proceed under GCC Clause 39.2.2 (a), the Supplier shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GCC Clause 39.2.1. The Supplier, at its discretion, may specify a validity period for the Change Proposal, after which if the Purchaser and Supplier has not reached agreement in accordance with GCC Clause 39.2.6, then GCC Clause 39.2.7 shall apply.
- 39.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If the nature of the Change is such that the Contract rates and prices are inequitable, the parties to the Contract shall agree on other specific rates to be used for valuing the Change.
- 39.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate impact of compliance with the Request for Change Proposal and with all other Change Orders that have already become binding upon the Supplier under this GCC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than fifteen (15) percent, the Supplier may give a written notice of objection to this Request for Change Proposal prior to furnishing the Change Proposal. If

the Purchaser accepts the Supplier's objection, the Purchaser shall withdraw the proposed Change and shall notify the Supplier in writing of its acceptance.

The Supplier's failure to so object to a Request for Change Proposal shall neither affect its right to object to any subsequent requested Changes or Change Orders, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Supplier represents.

39.2.6 Upon receipt of the Change Proposal, the Purchaser and the Supplier shall mutually agree upon all matters contained in the Change Proposal. Within fourteen (14) days after such agreement, the Purchaser shall, if it intends to proceed with the Change, issue the Supplier a Change Order. If the Purchaser is unable to reach a decision within fourteen (14) days, it shall notify the Supplier with details of when the Supplier can expect a decision. If the Purchaser decides not to proceed with the Change for whatever reason, it shall, within the said period of fourteen (14) days, notify the Supplier accordingly. Under such circumstances, the Supplier shall be entitled to reimbursement of all costs reasonably incurred by it in the preparation of the Change Proposal, provided that these do not exceed the amount given by the Supplier in its Change Estimate Proposal submitted in accordance with GCC Clause 39.2.2.

39.2.7 If the Purchaser and the Supplier cannot reach agreement on the price for the Change, an equitable adjustment to the Time for Achieving Operational Acceptance, or any other matters identified in the Change Proposal, the Change will not be implemented. However, this provision does not limit the rights of either party under GCC Clause 6 (Settlement of Disputes).

### 39.3 Changes Originating from Supplier

If the Supplier proposes a Change pursuant to GCC Clause 39.1.2, the Supplier shall submit to the Project Manager a written "Application for Change Proposal," giving reasons for the proposed Change and including the information specified in GCC Clause 39.2.1. Upon receipt of the Application for Change Proposal, the parties shall follow the procedures outlined in GCC Clauses 39.2.6 and

39.2.7. However, should the Purchaser choose not to proceed or the Purchaser and the Supplier cannot come to agreement on the change during any validity period that the Supplier may specify in its Application for Change Proposal, the Supplier shall not be entitled to recover the costs of preparing the Application for Change Proposal, unless subject to an agreement between the Purchaser and the Supplier to the contrary.

39.4 Value engineering. The Supplier may prepare, at its own cost, a value engineering proposal at any time during the performance of the Contract. The value engineering proposal shall, at a minimum, include the following;

- (a) the proposed change(s), and a description of the difference to the existing Contract requirements;
- (b) a full cost/benefit analysis of the proposed change(s) including a description and estimate of costs (including life cycle costs) the Purchaser may incur in implementing the value engineering proposal; and
- (c) a description of any effect(s) of the change on performance/functionality.

The Purchaser may accept the value engineering proposal if the proposal demonstrates benefits that:

- (a) accelerates the delivery period; or
- (b) reduces the Contract Price or the life cycle costs to the Purchaser; or
- (c) improves the quality, efficiency, safety or sustainability of the systems; or
- (d) yields any other benefits to the Purchaser,

without compromising the necessary functions of the systems.

If the value engineering proposal is approved by the Purchaser and results in:

- (a) a reduction of the Contract Price; the amount to be paid to the Supplier shall be the percentage specified in the SCC of the reduction in the Contract Price; or
- (b) an increase in the Contract Price; but results in a reduction in life cycle costs due to any benefit described in (a) to (d) above,

the amount to be paid to the Supplier shall be the full increase in the Contract Price.

**40. Extension of Time for Achieving Operational Acceptance**

40.1 The time(s) for achieving Operational Acceptance specified in the Schedule of Implementation shall be extended if the Supplier is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:

- (a) any Change in the System as provided in GCC Clause 39 (Change in the Information System);
- (b) any occurrence of Force Majeure as provided in GCC Clause 38 (Force Majeure);
- (c) default of the Purchaser; or
- (d) any other matter specifically mentioned in the Contract;

by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Supplier.

40.2 Except where otherwise specifically provided in the Contract, the Supplier shall submit to the Project Manager a notice of a claim for an extension of the time for achieving Operational Acceptance, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Purchaser and the Supplier shall agree upon the period of such extension. In the event that the Supplier does not accept the Purchaser's estimate of a fair and reasonable time extension, the Supplier shall be entitled to refer the matter to the provisions for the Settlement of Disputes pursuant to GCC Clause 43.

40.3 The Supplier shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.

**41. Termination**

41.1 Termination for Purchaser's Convenience

41.1.1 The Purchaser may at any time terminate the Contract for any reason by giving the Supplier a notice of termination that refers to this GCC Clause 41.1.

41.1.2 Upon receipt of the notice of termination under GCC Clause 41.1.1, the Supplier shall either as soon as reasonably practical or upon the date specified in the notice of termination

- (a) cease all further work, except for such work as the Purchaser may specify in the notice of termination for the sole purpose of protecting that part of the System already executed, or any work required to leave the site in a clean and safe condition;
- (b) terminate all subcontracts, except those to be assigned to the Purchaser pursuant to GCC Clause 41.1.2 (d) (ii) below;
- (c) remove all Supplier's Equipment from the site, repatriate the Supplier's Personnel from the site, remove from the site any wreckage, rubbish, and debris of any kind;
- (d) in addition, the Supplier, subject to the payment specified in GCC Clause 41.1.3, shall
  - (i) deliver to the Purchaser the parts of the System executed by the Supplier up to the date of termination;
  - (ii) to the extent legally possible, assign to the Purchaser all right, title, and benefit of the Supplier to the System, or Subsystem, as at the date of termination, and, as may be required by the Purchaser, in any subcontracts concluded between the Supplier and its Subcontractors;
  - (iii) deliver to the Purchaser all nonproprietary drawings, specifications, and other documents prepared by the Supplier or its Subcontractors as of the date of termination in connection with the System.

41.1.3 In the event of termination of the Contract under GCC Clause 41.1.1, the Purchaser shall pay to the Supplier the following amounts:

- (a) the Contract Price, properly attributable to the parts of the System executed by the Supplier as of the date of termination;
- (b) the costs reasonably incurred by the Supplier in the removal of the Supplier's Equipment from the site and in the repatriation of the Supplier's Personnel;
- (c) any amount to be paid by the Supplier to its Subcontractors in connection with the

termination of any subcontracts, including any cancellation charges;

- (d) costs incurred by the Supplier in protecting the System and leaving the site in a clean and safe condition pursuant to GCC Clause 41.1.2 (a); and
- (e) the cost of satisfying all other obligations, commitments, and claims that the Supplier may in good faith have undertaken with third parties in connection with the Contract and that are not covered by GCC Clauses 41.1.3 (a) through (d) above.

#### 41.2 Termination for Supplier's Default

41.2.1 The Purchaser, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefore to the Supplier, referring to this GCC Clause 41.2:

- (a) if the Supplier becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Supplier is a corporation, a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Supplier takes or suffers any other analogous action in consequence of debt;
- (b) if the Supplier assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 42 (Assignment); or
- (c) if the Supplier, in the judgment of the Purchaser has engaged in Fraud and Corruption, as defined in paragraph 2.2 a. of the Appendix 1 to the GCC, in competing for or in executing the Contract, including but not limited to willful misrepresentation of facts concerning ownership of Intellectual Property Rights in, or proper authorization and/or licenses from the owner to offer, the hardware, software, or materials provided under this Contract.

41.2.2 If the Supplier:

- (a) has abandoned or repudiated the Contract;

- (b) has without valid reason failed to commence work on the System promptly;
- (c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause;
- (d) refuses or is unable to provide sufficient Materials, Services, or labor to execute and complete the System in the manner specified in the Agreed Project Plan furnished under GCC Clause 19 at rates of progress that give reasonable assurance to the Purchaser that the Supplier can attain Operational Acceptance of the System by the Time for Achieving Operational Acceptance as extended;

then the Purchaser may, without prejudice to any other rights it may possess under the Contract, give a notice to the Supplier stating the nature of the default and requiring the Supplier to remedy the same. If the Supplier fails to remedy or to take steps to remedy the same within thirty (30) days of its receipt of such notice, then the Purchaser may terminate the Contract forthwith by giving a notice of termination to the Supplier that refers to this GCC Clause 41.2.

41.2.3 Upon receipt of the notice of termination under GCC Clauses 41.2.1 or 41.2.2, the Supplier shall, either immediately or upon such date as is specified in the notice of termination:

- (a) cease all further work, except for such work as the Purchaser may specify in the notice of termination for the sole purpose of protecting that part of the System already executed or any work required to leave the site in a clean and safe condition;
- (b) terminate all subcontracts, except those to be assigned to the Purchaser pursuant to GCC Clause 41.2.3 (d) below;
- (c) deliver to the Purchaser the parts of the System executed by the Supplier up to the date of termination;
- (d) to the extent legally possible, assign to the Purchaser all right, title and benefit of the Supplier to the System or Subsystems as at the

date of termination, and, as may be required by the Purchaser, in any subcontracts concluded between the Supplier and its Subcontractors;

- (e) deliver to the Purchaser all drawings, specifications, and other documents prepared by the Supplier or its Subcontractors as at the date of termination in connection with the System.

41.2.4 The Purchaser may enter upon the site, expel the Supplier, and complete the System itself or by employing any third party. Upon completion of the System or at such earlier date as the Purchaser thinks appropriate, the Purchaser shall give notice to the Supplier that such Supplier's Equipment will be returned to the Supplier at or near the site and shall return such Supplier's Equipment to the Supplier in accordance with such notice. The Supplier shall thereafter without delay and at its cost remove or arrange removal of the same from the site.

41.2.5 Subject to GCC Clause 41.2.6, the Supplier shall be entitled to be paid the Contract Price attributable to the portion of the System executed as at the date of termination and the costs, if any, incurred in protecting the System and in leaving the site in a clean and safe condition pursuant to GCC Clause 41.2.3 (a). Any sums due the Purchaser from the Supplier accruing prior to the date of termination shall be deducted from the amount to be paid to the Supplier under this Contract.

41.2.6 If the Purchaser completes the System, the cost of completing the System by the Purchaser shall be determined. If the sum that the Supplier is entitled to be paid, pursuant to GCC Clause 41.2.5, plus the reasonable costs incurred by the Purchaser in completing the System, exceeds the Contract Price, the Supplier shall be liable for such excess. If such excess is greater than the sums due the Supplier under GCC Clause 41.2.5, the Supplier shall pay the balance to the Purchaser, and if such excess is less than the sums due the Supplier under GCC Clause 41.2.5, the Purchaser shall pay the balance to the Supplier. The Purchaser and the Supplier shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.

### 41.3 Termination by Supplier

## 41.3.1 If:

- (a) the Purchaser has failed to pay the Supplier any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause **pursuant to the SCC**, or commits a substantial breach of the Contract, the Supplier may give a notice to the Purchaser that requires payment of such sum, with interest on this sum as stipulated in GCC Clause 12.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Purchaser to remedy the same, as the case may be. If the Purchaser fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within fourteen (14) days after receipt of the Supplier's notice; or
- (b) the Supplier is unable to carry out any of its obligations under the Contract for any reason attributable to the Purchaser, including but not limited to the Purchaser's failure to provide possession of or access to the site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the System;

then the Supplier may give a notice to the Purchaser of such events, and if the Purchaser has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within twenty-eight (28) days of such notice, or if the Supplier is still unable to carry out any of its obligations under the Contract for any reason attributable to the Purchaser within twenty-eight (28) days of the said notice, the Supplier may by a further notice to the Purchaser referring to this GCC Clause 41.3.1, forthwith terminate the Contract.

- 41.3.2 The Supplier may terminate the Contract immediately by giving a notice to the Purchaser to that effect, referring to this GCC Clause 41.3.2, if the Purchaser becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or,

being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Purchaser takes or suffers any other analogous action in consequence of debt.

41.3.3 If the Contract is terminated under GCC Clauses 41.3.1 or 41.3.2, then the Supplier shall immediately:

- (a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the System already executed, or any work required to leave the site in a clean and safe condition;
- (b) terminate all subcontracts, except those to be assigned to the Purchaser pursuant to Clause 41.3.3 (d) (ii);
- (c) remove all Supplier's Equipment from the site and repatriate the Supplier's Personnel from the site.
- (d) In addition, the Supplier, subject to the payment specified in GCC Clause 41.3.4, shall:
  - (i) deliver to the Purchaser the parts of the System executed by the Supplier up to the date of termination;
  - (ii) to the extent legally possible, assign to the Purchaser all right, title, and benefit of the Supplier to the System, or Subsystems, as of the date of termination, and, as may be required by the Purchaser, in any subcontracts concluded between the Supplier and its Subcontractors;
  - (iii) to the extent legally possible, deliver to the Purchaser all drawings, specifications, and other documents prepared by the Supplier or its Subcontractors as of the date of termination in connection with the System.

41.3.4 If the Contract is terminated under GCC Clauses 41.3.1 or 41.3.2, the Purchaser shall pay to the Supplier all payments specified in GCC Clause 41.1.3 and reasonable compensation for all loss, except for

loss of profit, or damage sustained by the Supplier arising out of, in connection with, or in consequence of such termination.

41.3.5 Termination by the Supplier pursuant to this GCC Clause 41.3 is without prejudice to any other rights or remedies of the Supplier that may be exercised in lieu of or in addition to rights conferred by GCC Clause 41.3.

41.4 In this GCC Clause 41, the expression “portion of the System executed” shall include all work executed, Services provided, and all Information Technologies, or other Goods acquired (or subject to a legally binding obligation to purchase) by the Supplier and used or intended to be used for the purpose of the System, up to and including the date of termination.

41.5 In this GCC Clause 41, in calculating any monies due from the Purchaser to the Supplier, account shall be taken of any sum previously paid by the Purchaser to the Supplier under the Contract, including any advance payment paid **pursuant to the SCC.**

## **42. Assignment**

42.1 Neither the Purchaser nor the Supplier shall, without the express prior written consent of the other, assign to any third party the Contract or any part thereof, or any right, benefit, obligation, or interest therein or thereunder, except that the Supplier shall be entitled to assign either absolutely or by way of charge any monies due and payable to it or that may become due and payable to it under the Contract.

## **I. SETTLEMENT OF DISPUTES**

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### **43. Settlement of Disputes**

43.1 Adjudication

43.1.1 If any dispute of any kind whatsoever shall arise between the Purchaser and the Supplier in connection with or arising out of the Contract, including without prejudice to the generality of the foregoing, any question regarding its existence, validity, or termination, or the operation of the System (whether during the progress of implementation or after its achieving Operational Acceptance and whether before or after the termination, abandonment, or breach of the Contract), the parties shall seek to resolve any such dispute by mutual consultation. If

the parties fail to resolve such a dispute by mutual consultation within fourteen (14) days after one party has notified the other in writing of the dispute, then, if the Contract Agreement in Appendix 2 includes and names an Adjudicator, the dispute shall, within another fourteen (14) days, be referred in writing by either party to the Adjudicator, with a copy to the other party. If there is no Adjudicator specified in the Contract Agreement, the mutual consultation period stated above shall last twenty-eight (28) days (instead of fourteen), upon expiry of which either party may move to the notification of arbitration pursuant to GCC Clause 43.2.1.

- 43.1.2 The Adjudicator shall give his or her decision in writing to both parties within twenty-eight (28) days of the dispute being referred to the Adjudicator. If the Adjudicator has done so, and no notice of intention to commence arbitration has been given by either the Purchaser or the Supplier within fifty-six (56) days of such reference, the decision shall become final and binding upon the Purchaser and the Supplier. Any decision that has become final and binding shall be implemented by the parties forthwith.
- 43.1.3 The Adjudicator shall be paid an hourly fee at the rate specified in the Contract Agreement plus reasonable expenditures incurred in the execution of duties as Adjudicator, and these costs shall be divided equally between the Purchaser and the Supplier.
- 43.1.4 Should the Adjudicator resign or die, or should the Purchaser and the Supplier agree that the Adjudicator is not fulfilling his or her functions in accordance with the provisions of the Contract, a new Adjudicator shall be jointly appointed by the Purchaser and the Supplier. Failing agreement between the two within twenty-eight (28) days, the new Adjudicator shall be appointed at the request of either party by the Appointing Authority **specified in the SCC**, or, if no Appointing Authority is **specified in SCC**, the Contract shall, from this point onward and until the parties may otherwise agree on an Adjudicator or an Appointing Authority, be implemented as if there is no Adjudicator.

## 43.2 Arbitration

## 43.2.1 If

- (a) the Purchaser or the Supplier is dissatisfied with the Adjudicator's decision and acts before this decision has become final and binding pursuant to GCC Clause 43.1.2, or
- (b) the Adjudicator fails to give a decision within the allotted time from referral of the dispute pursuant to GCC Clause 43.1.2, and the Purchaser or the Supplier acts within the following fourteen (14) days, or
- (c) in the absence of an Adjudicator from the Contract Agreement, the mutual consultation pursuant to GCC Clause 43.1.1 expires without resolution of the dispute and the Purchaser or the Supplier acts within the following fourteen (14) days,

then either the Purchaser or the Supplier may act to give notice to the other party, with a copy for information to the Adjudicator in case an Adjudicator had been involved, of its intention to commence arbitration, as provided below, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given.

43.2.2 Any dispute in respect of which a notice of intention to commence arbitration has been given, in accordance with GCC Clause 43.2.1, shall be finally settled by arbitration. Arbitration may be commenced prior to or after Installation of the Information System.

43.2.3 Arbitration proceedings shall be conducted in accordance with the rules of procedure **specified in the SCC**.

43.3 Notwithstanding any reference to the Adjudicator or arbitration in this clause,

- (a) the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree;
- (b) the Purchaser shall pay the Supplier any monies due the Supplier.

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## **J. CYBER SECURITY**

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### **44. Cyber Security**

- 44.1 **Pursuant to the SCC**, the Supplier, including its Subcontractors/ suppliers/ manufacturers shall take all technical and organizational measures necessary to protect the information technology systems and data used in connection with the Contract. Without limiting the foregoing, the Supplier, including its Subcontractors/ suppliers/ manufacturers, shall use all reasonable efforts to establish, maintain, implement and comply with, reasonable information technology, information security, cyber security and data protection controls, policies and procedures, including oversight, access controls, encryption, technological and physical safeguards and business continuity/disaster recovery and security plans that are designed to protect against and prevent breach, destruction, loss, unauthorized distribution, use, access, disablement, misappropriation or modification, or other compromise or misuse of or relating to any information technology system or data used in connection with the Contract.

## APPENDIX 1

### Fraud and Corruption

*(Text in this Appendix shall not be modified)*

#### 1. Purpose

- 1.1 The Bank's Anti-Corruption Guidelines and this annex apply with respect to procurement under Bank Investment Project Financing operations.

#### 2. Requirements

- 2.1 The Bank requires that Borrowers (including beneficiaries of Bank financing); bidders (applicants/proposers), consultants, contractors and suppliers; any sub-contractors, sub-consultants, service providers or suppliers; any agents (whether declared or not); and any of their personnel, observe the highest standard of ethics during the procurement process, selection and contract execution of Bank-financed contracts, and refrain from Fraud and Corruption.

- 2.2 To this end, the Bank:

- a. Defines, for the purposes of this provision, the terms set forth below as follows:
  - i. "corrupt practice" is the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;
  - ii. "fraudulent practice" is any act or omission, including misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain financial or other benefit or to avoid an obligation;
  - iii. "collusive practice" is an arrangement between two or more parties designed to achieve an improper purpose, including to influence improperly the actions of another party;
  - iv. "coercive practice" is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
  - v. "obstructive practice" is:
    - (a) deliberately destroying, falsifying, altering, or concealing of evidence material to the investigation or making false statements to investigators in order to materially impede a Bank investigation into allegations of a corrupt, fraudulent, coercive, or collusive practice; and/or threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or
    - (b) acts intended to materially impede the exercise of the Bank's inspection and audit rights provided for under paragraph 2.2 e. below.

- b. Rejects a proposal for award if the Bank determines that the firm or individual recommended for award, any of its personnel, or its agents, or its sub-consultants, sub-contractors, service providers, suppliers and/ or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract in question;
- c. In addition to the legal remedies set out in the relevant Legal Agreement, may take other appropriate actions, including declaring misprocurement, if the Bank determines at any time that representatives of the Borrower or of a recipient of any part of the proceeds of the loan engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices during the procurement process, selection and/or execution of the contract in question, without the Borrower having taken timely and appropriate action satisfactory to the Bank to address such practices when they occur, including by failing to inform the Bank in a timely manner at the time they knew of the practices;
- d. Pursuant to the Bank's Anti-Corruption Guidelines, and in accordance with the Bank's prevailing sanctions policies and procedures, may sanction a firm or individual, either indefinitely or for a stated period of time, including by publicly declaring such firm or individual ineligible (i) to be awarded or otherwise benefit from a Bank-financed contract, financially or in any other manner;<sup>1</sup> (ii) to be a nominated<sup>2</sup> sub-contractor, consultant, manufacturer or supplier, or service provider of an otherwise eligible firm being awarded a Bank-financed contract; and (iii) to receive the proceeds of any loan made by the Bank or otherwise to participate further in the preparation or implementation of any Bank-financed project;
- e. Requires that a clause be included in bidding/request for proposals documents and in contracts financed by a Bank loan, requiring (i) bidders (applicants/proposers), consultants, contractors, and suppliers, and their sub-contractors, sub-consultants, service providers, suppliers, agents, personnel, permit the Bank to inspect<sup>3</sup> all accounts,

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<sup>1</sup> For the avoidance of doubt, a sanctioned party's ineligibility to be awarded a contract shall include, without limitation, (i) applying for pre-qualification, expressing interest in a consultancy, and bidding, either directly or as a nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider, in respect of such contract, and (ii) entering into an addendum or amendment introducing a material modification to any existing contract.

<sup>2</sup> A nominated sub-contractor, nominated consultant, nominated manufacturer or supplier, or nominated service provider (different names are used depending on the particular bidding document) is one which has been: (i) included by the bidder in its pre-qualification application or bid because it brings specific and critical experience and know-how that allow the bidder to meet the qualification requirements for the particular bid; or (ii) appointed by the Borrower.

<sup>3</sup> Inspections in this context usually are investigative (i.e., forensic) in nature. They involve fact-finding activities undertaken by the Bank or persons appointed by the Bank to address specific matters related to investigations/audits, such as evaluating the veracity of an allegation of possible Fraud and Corruption, through the appropriate mechanisms. Such activity includes but is not limited to: accessing and examining a firm's or individual's financial records and information, and making copies thereof as relevant; accessing and examining any other documents, data and information (whether in hard copy or electronic format) deemed relevant for the investigation/audit, and making copies thereof as relevant; interviewing staff and other relevant individuals; performing physical inspections and site visits; and obtaining third party verification of information.

records and other documents relating to the procurement process, selection and/or contract execution, and to have them audited by auditors appointed by the Bank.

## APPENDIX 2

### Sexual Exploitation and Abuse (SEA) and/or Sexual Harassment (SH) Performance Declaration for Subcontractors

*[The following table shall be filled in by each subcontractor proposed by the Supplier, that was not named in the Contract]*

Subcontractor's Name: *[insert full name]*

Date: *[insert day, month, year]*

Contract reference *[insert contract reference]*

Page *[insert page number]* of *[insert total number]* pages

| <b>SEA and/or SH Declaration</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>We:</p> <p><input type="checkbox"/> (a) have not been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.</p> <p><input type="checkbox"/> (b) are subject to disqualification by the Bank for non-compliance with SEA/ SH obligations.</p> <p><input type="checkbox"/> (c) had been subject to disqualification by the Bank for non-compliance with SEA/ SH obligations, and were removed from the disqualification list. An arbitral award on the disqualification case has been made in our favor.</p> |
| <p><b><i>[If (c) above is applicable, attach evidence of an arbitral award reversing the findings on the issues underlying the disqualification.]</i></b></p>                                                                                                                                                                                                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>Period of disqualification: From: _____ To: _____</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

Name of the Subcontractor \_\_\_\_\_

Name of the person duly authorized to sign on behalf of the Subcontractor \_\_\_\_\_

Title of the person signing on behalf of the Subcontractor \_\_\_\_\_

Signature of the person named above \_\_\_\_\_

Date signed \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

Countersignature of authorized representative of the Supplier:

Signature: \_\_\_\_\_

Date signed \_\_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_

## SECTION IX - SPECIAL CONDITIONS OF CONTRACT

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## Special Conditions of Contract

The following Special Conditions of Contract (SCC) shall supplement or amend the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions of the SCC shall prevail over those in the General Conditions of Contract. For the purposes of clarity, any referenced GCC clause numbers are indicated in the left column of the SCC.

### A. CONTRACT AND INTERPRETATION

#### Definitions (GCC Clause 1)

|                    |                                                                                                                                                                           |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 1.1 (a) (ix)   | The applicable edition of the Procurement Regulation is dated: <b><i>Fifth Edition September 2023</i></b>                                                                 |
| GCC 1.1 (b) (i)    | The Purchaser is: <b><i>Ministry of Information Technology and Telecommunication</i></b>                                                                                  |
| GCC 1.1 (b) (ii)   | The Project Manager is: <b><i>To be mentioned.</i></b>                                                                                                                    |
| GCC 1.1 (e) (i)    | The Purchaser's Country is: <b><i>Islamic Republic of Pakistan</i></b>                                                                                                    |
| GCC 1.1 (e) (x)    | <b><i>The contract shall be valid till successful completion of all the contractual obligation and/or any extended period as mutually agreed between the parties.</i></b> |
| GCC 1.1 (e) (xiii) | <b><i>Not Applicable</i></b>                                                                                                                                              |

#### Notices (GCC Clause 4)

|         |                                                                                                                                     |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|
| GCC 4.3 | Address of the Project Manager: <b><i>To be mentioned.</i></b><br>Fallback address of the Purchaser: <b><i>To be mentioned.</i></b> |
|---------|-------------------------------------------------------------------------------------------------------------------------------------|

### B. SUBJECT MATTER OF CONTRACT

#### Scope of the System (GCC Clause 7)

|         |                                                                                                                                                                                                                                                                          |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 7.3 | The Supplier's obligations under the Contract will include the following recurrent cost items, as identified in the Recurrent Cost tables in the Supplier's Proposal:<br><br><b><i>See the section System Inventory Table (Recurrent Cost Items) in section vii.</i></b> |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |                                                                                                                                                                                                                                                                                                               |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b><i>Furthermore, The Supplier shall establish a Project Management Office (PMO) aligned with MOITT PMU, with monthly progress reporting and milestone-based reviews;</i></b></p> <p><b><i>No material design or scope change shall be implemented without written approval of the Purchaser.</i></b></p> |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### Time for Commencement and Operational Acceptance ( GCC Clause 8)

|         |                                                                                                      |
|---------|------------------------------------------------------------------------------------------------------|
| GCC 8.1 | The Supplier shall commence work on the System: <b><i>From the Signing Date of the Contract.</i></b> |
|---------|------------------------------------------------------------------------------------------------------|

### Supplier's Responsibilities ( GCC Clause 9)

|          |                                                                                           |
|----------|-------------------------------------------------------------------------------------------|
| GCC 9.1  | <i>Not Applicable</i>                                                                     |
| GCC 9.8  | The following sustainable procurement contractual provisions, apply: <b><i>"none"</i></b> |
| GCC 9.18 | <i>Not Applicable.</i>                                                                    |

## C. PAYMENT

### Contract Price ( GCC Clause 11)

|          |                                                                                       |
|----------|---------------------------------------------------------------------------------------|
| GCC 11.2 | Adjustments to the Contract Price shall be as follows: <b><i>"not applicable"</i></b> |
|----------|---------------------------------------------------------------------------------------|

### Terms of Payment ( GCC Clause 12)

|          |                                                                                                                                                                                          |                                                                                                                                                                                          |                    |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| GCC 12.1 | Subject to the provisions of GCC Clause 12 (Terms of Payment), the Purchaser shall pay the Contract Price to the Supplier according to the categories and in the manner specified below. |                                                                                                                                                                                          |                    |
|          | Milestones<br><i>(Linkage with Deliverables)</i>                                                                                                                                         | Description                                                                                                                                                                              | Payment Percentage |
|          | M1<br><i>(Deliverable 1)</i>                                                                                                                                                             | Submission & Approval of Project Foundation Pack having:<br>Inception Report, Business Requirements Document (BRD), Data Agencies Technical Enablement Plan, Deployment Architecture and | 05%                |

|  |                                             |                                                                                                                                                                                                                                          |                         |     |                                                                                                                                |
|--|---------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------|
|  |                                             | Environment Design, Operational Readiness and Knowledge Transfer Plan                                                                                                                                                                    |                         |     |                                                                                                                                |
|  | <b>M2</b><br><i>(Deliverable 2)</i>         | <b>Submission and Approval of Unified &amp; Modular System Design Document</b> for National Open Data Portal, Developer Sandbox, Data Extraction, Transformation and Standardisation Layer, AI/ML Analytical Model Library, API Gateway. |                         | 05% | Formal written approval of <b>Deliverable 2</b> by DEEP.                                                                       |
|  | <b>M3</b><br><i>(Deliverable 3)</i>         | <b>Complete Solution Development and Deployment of Integrated Staging Environment and Successful UAT Sign-Off</b> (Fully Operational system deployed for testing)                                                                        |                         | 10% | Formal written approval of <b>Deliverable 3</b> by DEEP.                                                                       |
|  | <b>M4</b><br><i>(Deliverable 4)</i>         | <b>Successful Security Audit &amp; Compliance Certificate</b> (Penetration testing, vulnerability remediation, certification by third party assigned / approved by purchaser)                                                            |                         | 05% | Formal written approval of <b>Deliverable 4</b> by DEEP.                                                                       |
|  | <b>M5</b><br><i>(Deliverable 5)</i>         | <b>Production Go-Live &amp; Acceptance</b> Fully working / functional system                                                                                                                                                             |                         | 15% | Formal written approval of <b>Deliverable 5</b> DEEP.<br>.                                                                     |
|  | <b>M6</b><br><i>(Deliverable 6 (A - E))</i> | <b>Platform Operationalization, Stabilization, Data Ingestion, Curation and Adoption Enablement:</b> which includes End-to-End Operationalization and Ecosystem                                                                          | D6-A (05 Organisations) | 10% | Upon Formal written approval of <b>Deliverable 6 (E)</b> by DEEP applicable to sub-deliverable D6-A, D6-B, D6-C, D6-D and D6-E |
|  |                                             |                                                                                                                                                                                                                                          | D6-B (05 Organisations) | 10% |                                                                                                                                |
|  |                                             |                                                                                                                                                                                                                                          | D6-C (05 Organisations) | 10% |                                                                                                                                |
|  |                                             |                                                                                                                                                                                                                                          | D6-D (05 Organisations) | 10% |                                                                                                                                |
|  |                                             |                                                                                                                                                                                                                                          | D6-E (05 Organisations) | 10% |                                                                                                                                |

|                                                                                                                                                                                                                                                                                                                             |  |                                                                                                                                                                                                                                       |             |                                               |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------------------------------------|
|                                                                                                                                                                                                                                                                                                                             |  | Enablement for Successful Onboarding, Data Ingestion, and Publication of all Datasets from a Minimum of 25 Organizations on the National Open Data Portal Ecosystem as divided into sub-deliverables D6-A, D6-B, D6-C, D6-D AND D6-E. |             |                                               |
| <b>Final Project Closure &amp; Sign-Off with Operational Acceptance</b><br><i>Submission and acceptance of the Final Project Report and complete project archive.</i>                                                                                                                                                       |  |                                                                                                                                                                                                                                       | 10%         | Formal closure a sign-off let issued by DEEP. |
| <b>Total Contract Value</b>                                                                                                                                                                                                                                                                                                 |  |                                                                                                                                                                                                                                       | <b>100%</b> |                                               |
| <b><i>Each milestone shall be supported by demonstrable deliverables, documentation, and acceptance sign-off. Each Milestone is explicitly linked with respective deliverables as mentioned above.</i></b>                                                                                                                  |  |                                                                                                                                                                                                                                       |             |                                               |
| The payment(s) shall be made upon completion of delivery and successful installation, testing, commissioning (as applicable) and subsequent acceptance as per respective clauses of the Contract together with verification/ acceptance/ sign-off of the Supplier’s invoice(s) and Documents for Payments by the Purchaser. |  |                                                                                                                                                                                                                                       |             |                                               |
| A sign-off by Purchaser regarding successful delivery and subsequent installation, testing, commissioning, and acceptance (as applicable) shall be a prerequisite before an invoice can be submitted by the Supplier.                                                                                                       |  |                                                                                                                                                                                                                                       |             |                                               |

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <p>For the payments under this Contract, the Supplier must opt any option(s) mentioned below at the time of proposal(s) submission. The method and conditions of payment to be made to the Supplier under this Contract shall be as follows:</p> <p><b>A. Payment for Goods and Services Quoted in Local Currency (PKR):</b></p> <p><i>Purchaser will make individual invoice's payment through Cross Cheque in PKR to the Supplier.</i></p> <p><b>B. Payment for Goods Quoted in Foreign Currency:</b></p> <p><b>(1).</b> <i>Purchaser will make individual invoice's payment in equivalent PKR as per the exchange rate (Selling Rate as notified by State Bank of Pakistan) prevailing on the date of verification/ acceptance/ sign-off of the invoice by the Purchaser as submitted by the Supplier along with Documents for Payment through Cross Cheque to the Supplier.</i></p> <p><b>(2).</b> <i>In the case of International Suppliers only, the World Bank upon request/ advise of Purchaser will make up to 100% of the individual invoice (foreign currency) payment to the Supplier in the corresponding currency of the Proposal/ Contract via Telegraphic/ Bank Transaction in Foreign Bank account.</i></p> |
| GCC 12.3 | <p>The payment-delay period after which the Purchaser shall pay interest to the Supplier shall be <b>ninety (90)</b> days.</p> <p>The interest rates that shall be applied are:</p> <ul style="list-style-type: none"> <li>• <i>1%+SOFR for Foreign Currency Contract(s)</i></li> <li>• <i>1%+KIBOR for Local Currency Contract(s)</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| GCC 12.4 | <p>The Supplier will invoice the Purchaser in the currency used in the Contract Agreement and the Price Schedules it refers to. For Goods and Services supplied locally, prices are quoted and paid in PKR.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| GCC 12.6 | <p><i>GCC Clause 12.6 applies.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

### Securities ( GCC Clause 13)

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 13.3.1 | <p>The Performance Security shall be denominated in <b><i>the currency(ies) of the Contract</i></b> for an amount equal to <b>5%</b> percent of the Contract Price, excluding any Recurrent Costs.</p> <p>The Performance Security shall be in the shape of an unconditional and irrevocable Bank Guarantee issued by any scheduled bank in Pakistan or by a foreign bank in correspondence with any scheduled Bank in Pakistan as per applicable template valid for a period of one (01) year beyond the Operational Acceptance or any extended period thereof.</p> |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|            |                                                                                                                                                                                                                                                                                                                                       |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 13.3.4 | <p>After Operational Acceptance of the System, the Performance Security shall be reduced to: <b>2.5%</b>.</p> <p>Discharge of the Performance Security shall take place: Within 30 days following the expiry of the Performance Security and successful completion of performance obligations by the Supplier under the Contract.</p> |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## D. INTELLECTUAL PROPERTY

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### Copyright ( GCC Clause 15)

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 15.3 | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 15.3</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| GCC 15.4 | <p><i>Pursuant to GCC Clause 15.4, all custom-developed software, configurations, source code, documentation, and APIs developed under the Contract shall vest irrevocably with the Purchaser.</i></p> <p><i>The Purchaser shall have:</i></p> <ul style="list-style-type: none"> <li>• <i>Perpetual, irrevocable, royalty-free rights to use, modify, and share such assets within Government of Pakistan;</i></li> <li>• <i>Rights to appoint third parties for maintenance, enhancement, or integration.</i></li> </ul> <p><i>Any third-party or open-source components shall be fully disclosed, with licenses compliant with government use.</i></p> |
| GCC 15.5 | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 15.5</i></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### Software License Agreements ( GCC Clause 16)

|                    |                                                                                                   |
|--------------------|---------------------------------------------------------------------------------------------------|
| GCC 16.1 (a) (iv)  | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 16.1 (a) (iv)</i></b>  |
| GCC 16.1 (b) (vi)  | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 16.1 (b) (vi)</i></b>  |
| GCC 16.1 (b) (vii) | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 16.1 (b) (vii)</i></b> |
| GCC 16.2           | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 16.2</i></b>           |

### Confidential Information (GCC Clause 17)

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 17.1 | <p><b><i>Pursuant to GCC Clause 17.1, all data generated, processed, or stored under the Contract shall be the exclusive property of the Government of Pakistan.</i></b></p> <p><b><i>The Supplier shall:</i></b></p> <ul style="list-style-type: none"> <li>• <b><i>Ensure data residency within locations approved by the Purchaser;</i></b></li> <li>• <b><i>Not access or use data except for Contract purposes;</i></b></li> <li>• <b><i>Comply with applicable data protection and Cybersecurity requirements.</i></b></li> </ul> |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## E. SUPPLY, INSTALLATION, TESTING, COMMISSIONING, AND ACCEPTANCE OF THE SYSTEM

---

### Representatives ( GCC Clause 18)

|            |                                                                                           |
|------------|-------------------------------------------------------------------------------------------|
| GCC 18.1   | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 18</i></b>     |
| GCC 18.2.2 | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 18.2.2</i></b> |

### Project Plan ( GCC Clause 19)

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 19.1 | <p>Chapters in the Project Plan shall address the following subject:</p> <ul style="list-style-type: none"> <li>(a) <b><i>Project Organization and Management Plan, including quality assurance, configuration management, problem escalation and resolution, etc.</i></b></li> <li>(b) <b><i>Systems Development Methodology with Timelines and Plan</i></b></li> <li>(c) <b><i>Development and Installation Plan</i></b></li> <li>(d) <b><i>Hosting &amp; Deployment Plan</i></b></li> <li>(e) <b><i>Operationalisation, Integration, Data Curation and Ingestion Plan</i></b></li> <li>(e) <b><i>Capacity Building Plan</i></b></li> <li>(f) <b><i>Reporting &amp; Documentation Plan</i></b></li> <li>(g) <b><i>Verification, Validation and Testing Plan</i></b></li> </ul> |
|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|          |                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|          | <p><b>(h) Technical Support Plan,</b></p> <p><b>(i) Resource Plan and Schedule;</b></p> <p>Further details regarding the required contents of each of the above chapters are contained in the Technical Requirements.</p>                                                                                                                                                                                         |
| GCC 19.6 | <p><b><i>The Supplier shall submit to the Purchaser:</i></b></p> <p><b>(i) monthly review and quality assurance reports</b></p> <p><b>(ii) monthly log of service calls and problem resolutions</b></p> <p><b>(iii) monthly capacity building reports</b></p> <p><b>(iv) monthly report on status of compliance to Cybersecurity risks management, and any foreseeable Cybersecurity risk and mitigation.</b></p> |
| GCC 19.7 | <ul style="list-style-type: none"> <li>• <b><i>There are no Special Conditions of Contract applicable to GCC Clause 19.7.</i></b></li> </ul>                                                                                                                                                                                                                                                                      |

#### **Design and Engineering ( GCC Clause 21)**

|            |                                                                                            |
|------------|--------------------------------------------------------------------------------------------|
| GCC 21.3.1 | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 21.3.1.</i></b> |
|------------|--------------------------------------------------------------------------------------------|

#### **Product Upgrades ( GCC Clause 23)**

|          |                                                                                          |
|----------|------------------------------------------------------------------------------------------|
| GCC 23.4 | <b><i>There are no Special Conditions of Contract applicable to GCC Clause 23.4.</i></b> |
|----------|------------------------------------------------------------------------------------------|

#### **Inspections and Tests ( GCC Clause 25)**

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 25 | <p><b><i>Pursuant to GCC Clause 25.</i></b></p> <p><b><i>As and where/ if applicable:</i></b></p> <p><b><i>i. The Purchaser or its representative shall have the right to inspect and/ or to test the Goods to confirm their conformity to the Technical/ Contract specifications at no extra cost to the Purchaser.</i></b></p> <p><b><i>ii. The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at point of delivery, and/ or at the Goods' final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and</i></b></p> |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><i>assistance, including access to drawings/ production data (if any/ applicable) and online verification from official web site of the Manufacture, shall be furnished to the inspectors at no charge to the Purchaser.</i></p> <p>iii. <i>Should any inspected or tested Goods fail to conform to the Specifications, the Purchaser may reject the Goods, and the Supplier shall replace the rejected Goods within three working days as per specification requirements free of cost to the Purchaser.</i></p> <p>iv. <i>The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at the Purchaser's delivery point shall in no way be limited or waived by reason of the Goods having previously been inspected, tested, and passed by the Purchaser or its representative prior to the Goods' shipment from the factory/ warehouse.</i></p> <p>v. <i>Nothing mentioned here "Inspection and Tests" shall not in any way release the Supplier from any warranty or other obligations under this Contract.</i></p> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### **Commissioning and Operational Acceptance ( GCC Clause 27)**

|            |                                                                                     |
|------------|-------------------------------------------------------------------------------------|
| GCC 27.2.1 | <i>There are no Special Conditions of Contract applicable to GCC Clause 27.2.1.</i> |
|------------|-------------------------------------------------------------------------------------|

### **F. GUARANTEES AND LIABILITIES**

---

#### **Operational Acceptance Time Guarantee ( GCC Clause 28)**

|          |                                                                                   |
|----------|-----------------------------------------------------------------------------------|
| GCC 28.2 | <i>There are no Special Conditions of Contract applicable to GCC Clause 28.2.</i> |
| GCC 28.3 | <i>There are no Special Conditions of Contract applicable to GCC Clause 28.3.</i> |

#### **Defect Liability ( GCC Clause 29)**

|          |                                                                                   |
|----------|-----------------------------------------------------------------------------------|
| GCC 29.1 | <i>There are no Special Conditions of Contract applicable to GCC Clause 29.1.</i> |
|----------|-----------------------------------------------------------------------------------|

|           |                                                                                   |
|-----------|-----------------------------------------------------------------------------------|
| GCC 29.4  | <i>There are no Special Conditions of Contract applicable to GCC Clause 29.4.</i> |
| GCC 29.10 | <i>There are no Special Conditions of Contract applicable to GCC Clause 29.1.</i> |

#### Functional Guarantees ( GCC Clause 30)

|        |                                                                                 |
|--------|---------------------------------------------------------------------------------|
| GCC 30 | <i>There are no Special Conditions of Contract applicable to GCC Clause 30.</i> |
| GCC 32 | <i>There are no Special Conditions of Contract applicable to GCC Clause 32.</i> |

### G. RISK DISTRIBUTION

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#### Insurances ( GCC Clause 37)

|              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 37.1 (c) | <i>The Supplier shall obtain Third-Party Liability Insurance in the amount of 10% of the Contract value excluding recurrent Costs (if any) with deductible limits of no more than 50% of the insurance amount. The insured Parties shall be Purchaser including its personnel whether regular or project staff or likewise and Purchaser's movable/ immovable properties. The Insurance shall cover the period from the date of signing/ effectiveness of the Contract until completion of the Contract including all the responsibilities/ obligations on the Supplier's part.</i> |
| GCC 37.1 (e) | <i>There are no Special Conditions of Contract applicable to GCC Clause 37.1 (e).</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

### H. CHANGE IN CONTRACT ELEMENTS

---

#### Changes to the System ( GCC Clause 39)

|            |                                                                                                                                                                                                                                                                                                                                            |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 39.2.1 | <p><i>Pursuant to GCC 39.2.1(f): sufficient information to enable assessment of cyber security risks.</i></p> <p><i>Changes shall be classified as:</i></p> <ul style="list-style-type: none"> <li>• <i>Minor (no cost/ schedule impact);</i></li> <li>• <i>Major (subject to detailed review/ approval, where applicable).</i></li> </ul> |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|          |                                                                                                         |
|----------|---------------------------------------------------------------------------------------------------------|
|          | <i>All changes shall follow a documented change control procedure.</i>                                  |
| GCC 39.4 | <b>Value Engineering</b><br>The Purchaser <b><i>will not</i></b> consider a Value Engineering Proposal. |

## I. SETTLEMENT OF DISPUTES

---

### Settlement of Disputes (GCC Clause 43)

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 43.1.4 | The Appointing Authority for the Adjudicator is: <i>Centre for International Investment and Commercial Arbitration of Pakistan</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| GCC 43.2.3 | <p><i>If the Supplier is from outside the Purchaser's Country, arbitration proceedings shall be conducted in accordance with the rules of arbitration of the International Chamber of Commerce (ICC). These rules, in the version in force at the time of the request for arbitration, will be deemed to form part of this Contract.</i></p> <p><i>If the Supplier is a national of the Purchaser's Country, any dispute between the Purchaser and a Supplier arising in connection with the present Contract shall be referred to arbitration in accordance with the laws of the Purchaser's country i.e., Arbitration Act 1940.</i></p> |

## J. CYBER SECURITY

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### Cyber Security (GCC Clause 44)

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GCC 44.1 | <p><b>Cyber Security “applies” to this Contract.</b></p> <p><b><i>The Supplier shall comply with all cybersecurity requirements set out in Section VII, clause 1.12 (Cybersecurity) and clause 1.7.3 (Information Security Standards). Non-compliance shall be treated as a material breach. The Supplier's obligations under GCC 44.1 include, but are not limited to, the vulnerability remediation timelines, security monitoring, and incident response provisions defined in Section VII.</i></b></p> <p><b><i>At contract expiry, termination or completion, the Supplier shall:</i></b></p> <ul style="list-style-type: none"> <li>• <b><i>Provide full handover of source code, configurations, credentials, and documentation;</i></b></li> </ul> |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|  |                                                                                                                                                                                                                    |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"><li>• <i>Support transition to another supplier or in-house team for up to six (6) months;</i></li><li>• <i>Ensure business continuity without service disruption.</i></li></ul> |
|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## SECTION X - CONTRACT FORMS

### Notes to Proposers on working with the Sample Contractual Forms

---

The following forms are to be completed and submitted by the successful Proposer following receipt of the Letter of Acceptance from the Purchaser: (i) Contract Agreement, with all Appendices; (ii) Performance Security; and (iii) Advance Payment Security – if applicable.

- **Contract Agreement:** In addition to specifying the parties and the Contract Price, the Contract Agreement is where the: (i) Supplier Representative; (ii) if applicable, agreed Adjudicator and his/her compensation; and (iii) the List of Approved Subcontractors are specified. In addition, modifications to the successful Proposer's Proposal Price Schedules are attached to the Agreement. These contain corrections and adjustments to the Supplier's Proposal prices to correct errors, adjust the Contract Price to reflect – if applicable - any extensions to Proposal validity beyond the last day of original Proposal validity plus 56 days, etc.
- **Performance Security:** Pursuant to GCC Clause 13.3, the successful Proposer is required to provide the Performance Security in the form contained in this section of this request for proposals document and in the amount specified in accordance with the SCC.
- **Advance Payment Security – if applicable:** Pursuant to GCC Clause 13.2, the successful Proposer is required to provide a bank guarantee for the full amount of the Advance Payment - if an Advance Payment is specified in the SCC for GCC Clause 12.1 - in the form contained in this section of this request for proposals document or another form acceptable to the Purchaser. If a Proposer wishes to propose a different Advance Payment Security form, it should submit a copy to the Purchaser promptly for review and confirmation of acceptability before the proposal submission deadline.

The Purchaser and Supplier will use the following additional forms during Contract implementation to formalize or certify important Contract events: (i) the Installation and Operational Acceptance Certificates; and (ii) the various Change Order forms. These and the procedures for their use during performance of the Contract are included in the request for proposals document for the information of Proposers.

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## NOTIFICATION OF INTENTION TO AWARD

---

*[This Notification of Intention to Award shall be sent to each Proposer that submitted a Proposal, unless the Proposer has previously received notice of exclusion from the process Proposer.]*

*[Send this Notification to the Proposer's Authorized Representative named in the Proposer Information Form]*

For the attention of Proposer's Authorized Representative

Name: *[insert Authorized Representative's name]*

Address: *[insert Authorized Representative's Address]*

Telephone/Fax numbers: *[insert Authorized Representative's telephone/fax numbers]*

Email Address: *[insert Authorized Representative's email address]*

*[IMPORTANT: insert the date that this Notification is transmitted to all participating Proposers. The Notification must be sent to all Proposers simultaneously. This means on the same date and as close to the same time as possible.]*

DATE OF TRANSMISSION: This Notification is sent by: *[specify email / fax]* on *[specify date]* (local time)

## Notification of Intention to Award

Purchaser: *[insert the name of the Purchaser]*

Project: *[insert name of project]*

Contract title: *[insert the name of the contract]*

Country: *[insert country where RFP is issued]*

Loan No. /Credit No. / Grant No.: *[insert reference number for loan/credit/grant]*

RFP No: *[insert RFP reference number from Procurement Plan]*

This Notification of Intention to Award (Notification) notifies you of our decision to award the above contract. The transmission of this Notification begins the Standstill Period. During the Standstill Period you may:

- a) request a debriefing in relation to the evaluation of your Proposal, and/or
- b) submit a Procurement-related Complaint in relation to the decision to award the contract.

### 1. The successful Proposer

|                       |                                                              |
|-----------------------|--------------------------------------------------------------|
| Name:                 | [insert name of successful Proposer]                         |
| Address:              | [insert address of the successful Proposer]                  |
| Contract price:       | [insert contract price of the successful Proposer]           |
| Total combined score: | [insert the total combined score of the successful Proposer] |

### 2. Other Proposers *[INSTRUCTIONS: insert names of all Proposers that submitted a Proposal, Proposal prices as read out and evaluated, technical scores and combined scores.]*

| Name of Proposer | Technical Score (If applicable) | Proposal price          | Evaluated Proposal Cost | Combined Score          |
|------------------|---------------------------------|-------------------------|-------------------------|-------------------------|
| [insert name]    | [insert Technical score]        | [insert Proposal price] | [insert evaluated cost] | [insert combined score] |
| [insert name]    | [insert Technical score]        | [insert Proposal price] | [insert evaluated cost] | [insert combined score] |
| [insert name]    | [insert Technical score]        | [insert Proposal price] | [insert evaluated cost] | [insert combined score] |

### 3. Reason/s why your Proposal was unsuccessful *[Delete if the combined score already reveals the reason]*

*[INSTRUCTIONS; State the reason/s why this Proposer's Proposal was unsuccessful. Do NOT include: (a) a point by point comparison with another Proposer's Proposal or (b) information that is marked confidential by the Proposer in its Proposal.]*

### 4. How to request a debriefing

DEADLINE: The deadline to request a debriefing expires at midnight on [insert date] (local time).

You may request a debriefing in relation to the results of the evaluation of your Proposal. If you decide to request a debriefing your written request must be made within three (3) Business Days of receipt of this Notification of Intention to Award.

Provide the contract name, reference number, name of the Proposer, contact details; and address the request for debriefing as follows:

Attention: *[insert full name of person, if applicable]*

Title/position: *[insert title/position]*

Agency: *[insert name of Purchaser]*

Email address: *[insert email address]*

Fax number: *[insert fax number or state “not applicable”]*

If your request for a debriefing is received within the 3 Business Days deadline, we will provide the debriefing within five (5) Business Days of receipt of your request. If we are unable to provide the debriefing within this period, the Standstill Period shall be extended by five (5) Business Days after the date that the debriefing is provided. If this happens, we will notify you and confirm the date that the extended Standstill Period will end.

The debriefing may be in writing, by phone, video conference call or in person. We shall promptly advise you in writing how the debriefing will take place and confirm the date and time.

If the deadline to request a debriefing has expired, you may still request a debriefing. In this case, we will provide the debriefing as soon as practicable, and normally no later than fifteen (15) Business Days from the date of publication of the Contract Award Notice.

## 5. How to make a complaint

**DEADLINE:** The deadline for submitting a Procurement-related Complaint challenging the decision to award the contract expires on midnight, *[insert date]* (local time).

Provide the contract name, reference number, name of the Proposer, contact details; and address the Procurement-related Complaint as follows:

Attention: *[insert full name of person, if applicable]*

Title/position: *[insert title/position]*

Agency: *[insert name of Purchaser]*

Email address: *[insert email address]*

Fax number: *[insert fax number or state “not applicable”]*

At this point in the procurement process, you may submit a Procurement-related Complaint challenging the decision to award the contract. You do not need to have requested, or received, a debriefing before making this complaint. Your complaint must be submitted within the Standstill Period and received by us before the Standstill Period ends.

For more information see the “Procurement Regulations for IPF Borrowers (Procurement Regulations) (Annex III).” You should read these provisions before preparing and submitting your complaint. In addition, the World Bank’s Guidance “How to make a Procurement-related Complaint” provides a useful explanation of the process, as well as a sample letter of complaint.

In summary, there are four essential requirements:

1. You must be an ‘interested party’. In this case, that means a Proposer who submitted a Proposal in this procurement, and is the recipient of a Notification of Intention to Award.
2. The complaint can only challenge the decision to award the contract.
3. You must submit the complaint within the deadline stated above.
4. You must include, in your complaint, all of the information required by the Procurement Regulations (as described in Annex III).

## 6. Standstill Period

DEADLINE: The Standstill Period is due to end at midnight on *[insert date]* (local time).

The Standstill Period lasts ten (10) Business Days after the date of transmission of this Notification of Intention to Award.

The Standstill Period may be extended. This may happen where we are unable to provide a debriefing within the five (5) Business Day deadline. If this happens we will notify you of the extension.

If you have any questions regarding this Notification please do not hesitate to contact us.

On behalf of the Purchaser:

**Signature:** \_\_\_\_\_

Title/position: *[insert title/position]*

Agency: *[insert name of Purchaser]*

Email address: *[insert email address]*

Telephone number: *[insert telephone number]*

## BENEFICIAL OWNERSHIP DISCLOSURE FORM

**INSTRUCTIONS TO PROPOSERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE FORM**

*This Beneficial Ownership Disclosure Form ("Form") is to be completed by the successful Proposer. In case of joint venture, the Proposer must submit a separate Form for each member. The beneficial ownership information to be submitted in this Form shall be current as of the date of its submission.*

*For the purposes of this Form, a Beneficial Owner of a Proposer is any natural person who ultimately owns or controls the Proposer by meeting one or more of the following conditions:*

- *directly or indirectly holding 25% or more of the shares*
- *directly or indirectly holding 25% or more of the voting rights*
- *directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Proposer*

RFP No.: *[insert number of RFP process]*

Request for Proposals No.: *[insert **identification**]*

To: *[insert **complete name of Purchaser**]*

In response to your request in the Letter of Acceptance dated *[insert date of letter of Acceptance]* to furnish additional information on beneficial ownership: *[select one option as applicable and delete the options that are not applicable]*

(i) we hereby provide the following beneficial ownership information.

Details of beneficial ownership

| Identity of Beneficial Owner | Directly or indirectly holding 25% or more of the shares<br>(Yes / No) | Directly or indirectly holding 25 % or more of the Voting Rights<br>(Yes / No) | Directly or indirectly having the right to appoint a majority of the board of the directors or an equivalent governing body of the Proposer<br>(Yes / No) |
|------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
|                              |                                                                        |                                                                                |                                                                                                                                                           |

|                                                                                     |  |  |  |
|-------------------------------------------------------------------------------------|--|--|--|
| <i>[include full name (last, middle, first), nationality, country of residence]</i> |  |  |  |
|-------------------------------------------------------------------------------------|--|--|--|

**OR**

(ii) *We declare that there is no Beneficial Owner meeting one or more of the following conditions:*

- directly or indirectly holding 25% or more of the shares
- directly or indirectly holding 25% or more of the voting rights
- directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Proposer

**OR**

(iii) *We declare that we are unable to identify any Beneficial Owner meeting one or more of the following conditions. [If this option is selected, the Proposer shall provide explanation on why it is unable to identify any Beneficial Owner]*

- directly or indirectly holding 25% or more of the shares
- directly or indirectly holding 25% or more of the voting rights
- directly or indirectly having the right to appoint a majority of the board of directors or equivalent governing body of the Proposer]

Name of the Proposer: *\*[insert complete name of the Proposer]*

Name of the person duly authorized to sign the Proposal on behalf of the Proposer: *\*\*[insert complete name of person duly authorized to sign the Proposal]*

Title of the person signing the Proposal: *[insert complete title of the person signing the Proposal]*

Signature of the person named above: \_\_\_\_\_

Date signed *[insert ordinal number]* day of *[insert month]*, *[insert year]*

\* In the case of the Proposal submitted by a Joint Venture specify the name of the Joint Venture as Proposer. In the event that the Proposer is a joint venture, each reference to “Proposer” in the Beneficial Ownership Disclosure Form (including this Introduction thereto) shall be read to refer to the joint venture member.

\*\* Person signing the Proposal shall have the power of attorney given by the Proposer. The power of attorney shall be attached with the Proposal Schedules.

## LETTER OF ACCEPTANCE

---

Purchaser: *[insert the name of the Purchaser]*

Project: *[insert name of project]*

Contract title: *[insert the name of the contract]*

Country: *[insert country where RFP is issued]*

Loan No. /Credit No. / Grant No.: *[insert reference number for loan/credit/grant]*

RFP No: *[insert RFP reference number from Procurement Plan]*

Date: *[insert Date]*

To: *[insert Name of Proposer]*

This is to notify you that your Proposal dated *[insert Date]* for execution of the *[insert brief description of the Information System]* for the Contract Price in the aggregate of *[insert amount in figures]* (*[insert amount in words]*), as corrected and modified in accordance with the Instructions to Proposers is hereby accepted by our Agency.

You are requested to furnish (i) the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose one of the Performance Security Forms and (ii) the additional information on beneficial ownership in accordance with ITP 47.1 within eight (8) Business days using the Beneficial Ownership Disclosure Form, included in Section X, - Contract Forms, of the request for proposals document.

Authorized Signature: \_\_\_\_\_

Name and Title of Signatory: *[insert Name and Title]*

Name of Agency: *[insert Purchaser Name]*

Attachment: Contract Agreement

## 1. CONTRACT AGREEMENT

---

THIS CONTRACT AGREEMENT is made

the [ *insert: ordinal number* ] day of [ *insert: month* ], [ *insert: year* ].

BETWEEN

- (1) [ *insert: Name of Purchaser* ], a [ *insert: description of type of legal entity, for example, an agency of the Ministry of . . .* ] of the Government of [ *insert: country of Purchaser* ], or corporation incorporated under the laws of [ *insert: country of Purchaser* ] and having its principal place of business at [ *insert: address of Purchaser* ] (hereinafter called “the Purchaser”), and
- (2) [ *insert: name of Supplier* ], a corporation incorporated under the laws of [ *insert: country of Supplier* ] and having its principal place of business at [ *insert: address of Supplier* ] (hereinafter called “the Supplier”).

WHEREAS the Purchaser desires to engage the Supplier to supply, install, achieve Operational Acceptance of, and support the following Information System [ *insert: brief description of the Information System* ] (“the System”), and the Supplier has agreed to such engagement upon and subject to the terms and conditions appearing below in this Contract Agreement.

NOW IT IS HEREBY AGREED as follows:

- |                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Article 1.         | 1.1 Contract Documents (Reference GCC Clause 1.1 (a) (ii))                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Contract Documents | <p>The following documents shall constitute the Contract between the Purchaser and the Supplier, and each shall be read and construed as an integral part of the Contract:</p> <ol style="list-style-type: none"> <li>(a) This Contract Agreement and the Appendices attached to the Contract Agreement</li> <li>(b) Special Conditions of Contract</li> <li>(c) General Conditions of Contract</li> <li>(d) Technical Requirements (including Implementation Schedule)</li> <li>(e) The Supplier’s proposal and original Price Schedules</li> <li>(f) Code of Conduct for Supplier’s Personnel</li> </ol> |

(g) [ *Add here: any other documents* ]

1.2 Order of Precedence (Reference GCC Clause 2)

In the event of any ambiguity or conflict between the Contract Documents listed above, the order of precedence shall be the order in which the Contract Documents are listed in Article 1.1 (Contract Documents) above, provided that Appendix 7 shall prevail over all provisions of the Contract Agreement and the other Appendices attached to the Contract Agreement and all the other Contract Documents listed in Article 1.1 above.

1.3 Definitions (Reference GCC Clause 1)

Capitalized words and phrases used in this Contract Agreement shall have the same meanings as are ascribed to them in the General Conditions of Contract.

Article 2.

Contract Price and  
Terms of Payment

2.1 Contract Price (Reference GCC Clause 1.1(a)(viii) and GCC Clause 11)

The Purchaser hereby agrees to pay to the Supplier the Contract Price in consideration of the performance by the Supplier of its obligations under the Contract. The Contract Price shall be the aggregate of: [ *insert: amount of foreign currency A in words* ], [ *insert: amount in figures* ], plus [ *insert: amount of foreign currency B in words* ], [ *insert: amount in figures* ], plus [ *insert: amount of foreign currency C in words* ], [ *insert: amount in figures* ], [ *insert: amount of local currency in words* ], [ *insert: amount in figures* ], as specified in the Grand Summary Price Schedule.

The Contract Price shall be understood to reflect the terms and conditions used in the specification of prices in the detailed price schedules, including the terms and conditions of the associated Incoterms, and the taxes, duties and related levies if and as identified.

Article 3.

Effective Date for  
Determining Time  
for Operational  
Acceptance

3.1 Effective Date (Reference GCC Clause 1.1 (e) (ix))

The time allowed for supply, installation, and achieving Operational Acceptance of the System shall be determined from the date when all of the following conditions have been fulfilled:

- (a) This Contract Agreement has been duly executed for and on behalf of the Purchaser and the Supplier;
- (b) The Supplier has submitted to the Purchaser the performance security and the advance payment security, in accordance with GCC Clause 13.2 and GCC Clause 13.3;
- (c) The Purchaser has paid the Supplier the advance payment, in accordance with GCC Clause 12;

Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.

- 3.2 If the conditions listed under 3.1 are not fulfilled within two (2) months from the date of this Contract Agreement because of reasons not attributable to the Supplier, the parties shall discuss and agree on an equitable adjustment to the Contract Price and the Time for Achieving Operational Acceptance and/or other relevant conditions of the Contract.

Article 4.

- 4.1 The Appendixes listed below shall be deemed to form an integral part of this Contract Agreement.

Appendixes

- 4.2 Reference in the Contract to any Appendix shall mean the Appendixes listed below and attached to this Contract Agreement, and the Contract shall be read and construed accordingly.

APPENDIXES

- Appendix 1. Supplier's Representative
- Appendix 2. Adjudicator
- Appendix 3. List of Approved Subcontractors
- Appendix 4. Categories of Software
- Appendix 5. Custom Materials
- Appendix 6. Revised Price Schedules (if any)
- Appendix 7. Minutes of Contract Finalization Discussions and Agreed-to Contract Amendments

IN WITNESS WHEREOF the Purchaser and the Supplier have caused this Agreement to be duly executed by their duly authorized representatives the day and year first above written.

For and on behalf of the Purchaser

Signed:

in the capacity of [ insert: *title or other appropriate designation* ]

in the presence of

For and on behalf of the Supplier

Signed:

in the capacity of [ *insert: title or other appropriate designation* ]

in the presence of

CONTRACT AGREEMENT

dated the [ *insert: number* ] day of [ *insert: month* ], [ *insert: year* ]

BETWEEN

[ *insert: name of Purchaser* ], “the Purchaser”

and

[ *insert: name of Supplier* ], “the Supplier”

## Appendix 1. Supplier's Representative

In accordance with GCC Clause 1.1 (b) (iv), the Supplier's Representative is:

Name: *[ insert: name and provide title and address further below, or state "to be nominated within fourteen (14) days of the Effective Date" ]*

Title: *[ if appropriate, insert: title ]*

In accordance with GCC Clause 4.3, the Supplier's addresses for notices under the Contract are:

Address of the Supplier's Representative: *[ as appropriate, insert: personal delivery, postal, cable, facsimile, electronic mail, and/or EDI addresses. ]*

Fallback address of the Supplier: *[ as appropriate, insert: personal delivery, postal, cable, facsimile, electronic mail, and/or EDI addresses. ]*

## Appendix 2. Adjudicator

In accordance with GCC Clause 1.1 (b) (viii), the agreed-upon Adjudicator is:

Name: *[ insert: **name** ]*

Title: *[ insert: **title** ]*

Address: *[ insert: **postal address** ]*

Telephone: *[ insert: **telephone** ]*

In accordance with GCC Clause 43.1.3, the agreed-upon fees and reimbursable expenses are:

Hourly Fees: *[ insert: **hourly fees** ]*

Reimbursable Expenses: *[ list: **reimbursables** ]*

Pursuant to GCC Clause 43.1.4, if at the time of Contract signing, agreement has not been reached between the Purchaser and the Supplier, an Adjudicator will be appointed by the Appointing Authority named in the SCC.



## Appendix 4. Categories of Software

The following table assigns each item of Software supplied and installed under the Contract to one of the three categories: (i) System Software, (ii) General-Purpose Software, or (iii) Application Software; and to one of the two categories: (i) Standard Software or (ii) Custom Software and to one of the two categories: (i) Proprietary or (ii) Open Source.

| Title          | (select one per title) |                 |             | (select one per title) |        | (select one per title) |             |
|----------------|------------------------|-----------------|-------------|------------------------|--------|------------------------|-------------|
|                | System                 | General-Purpose | Application | Standard               | Custom | Proprietary            | Open Source |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
| [insert Title] |                        |                 |             |                        |        |                        |             |
|                |                        |                 |             |                        |        |                        |             |

## Appendix 5. Custom Materials

The follow table specifies the Custom Materials the Supplier will provide under the Contract.

| Custom Materials                      |
|---------------------------------------|
| <i>[insert Title and description]</i> |
| <i>[insert Title and description]</i> |
| <i>[insert Title and description]</i> |
| <i>[insert Title and description]</i> |
| <i>[insert Title and description]</i> |
|                                       |

## **Appendix 6. Revised Price Schedules**

The attached Revised Price Schedules (if any) shall form part of this Contract Agreement and, where differences exist, shall supersede the Price Schedules contained in the Supplier's Proposal. These Revised Price Schedules reflect any corrections or adjustments to the Supplier's proposal price, pursuant to the ITP Clauses 30.3 and 38.2.

## **Appendix 7. Minutes of Contract Finalization Discussions and Agreed-to Contract Amendments**

The attached Contract amendments (if any) shall form part of this Contract Agreement and, where differences exist, shall supersede the relevant clauses in the GCC, SCC, Technical Requirements, or other parts of this Contract as defined in GCC Clause 1.1 (a) (ii).

## 2. PERFORMANCE AND ADVANCE PAYMENT SECURITY FORMS

---

### 2.1 Performance Security Form (Bank Guarantee) (Bank Guarantee)

*[The bank, as requested by the successful Proposer, shall fill in this form in accordance with the instructions indicated]*

*[Guarantor letterhead or SWIFT identifier code]*

*[insert: **Bank's Name, and Address of Issuing Branch or Office**]*

Beneficiary: *[insert: **Name and Address of Purchaser**]*

Date: *[insert: **date**]*

PERFORMANCE GUARANTEE No.: *[insert: **Performance Guarantee Number**]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that on *[insert: **date of award**]* you awarded Contract No. *[insert: **Contract number**]* for *[insert: **title and/or brief description of the Contract**]* (hereinafter called "the Contract") to *[insert: **complete name of Supplier which in the case of a joint venture shall be in the name of the joint venture**]* (hereinafter called "the Applicant"). Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Applicant, we as Guarantor hereby irrevocably undertake to pay you any sum(s) not exceeding *[insert: **amount(s)<sup>1</sup> in figures and words**]* such sum being payable in the types and proportions of currencies which the Contract Price is payable upon receipt by us of the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the contract without the Beneficiary needing to prove or to show grounds or reasons for their demand or the sum specified therein.

On the date of your issuing, to the Supplier, the Operational Acceptance Certificate for the System, the value of this guarantee will be reduced to any sum(s) not exceeding *[insert: **amount(s)<sup>1</sup> in figures and words**]*. This remaining guarantee shall expire no later than *[insert: **number and**]*

---

<sup>1</sup> The bank shall insert the amount(s) specified and denominated in the SCC for GCC Clauses 13.3.1 and 13.3.4 respectively, either in the currency(ies) of the Contract or a freely convertible currency acceptable to the Purchaser.

*select: of months/of years (of the Warranty Period that needs to be covered by the remaining guarantee)] from the date of the Operational Acceptance Certificate for the System,<sup>1</sup> and any demand for payment under it must be received by us at this office on or before that date.*

This guarantee is subject to the Uniform Rules for Demand Guarantees, (URDG) 2010 Revision, ICC Publication No. 758, except that the supporting statement under 15 (a) is hereby excluded.

---

*[Signature(s)]*

*[Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.]*

---

<sup>1</sup> *In this sample form, the formulation of this paragraph reflects the usual SCC provisions for GCC Clause 13.3. However, if the SCC for GCC Clauses 13.3.1 and 13.3.4 varies from the usual provisions, the paragraph, and possibly the previous paragraph, need to be adjusted to precisely reflect the provisions specified in the SCC.*

## 2.2 Advance Payment Security

### Bank Guarantee – Not Applicable for This RFP

*[Guarantor letterhead or SWIFT identifier code]*

Beneficiary: *[insert: Name and Address of Purchaser]*

Date: *[insert date of issue]*

ADVANCE PAYMENT GUARANTEE No.: *[insert: Advance Payment Guarantee Number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that on *[insert: date of award]* you awarded Contract No. *[insert: Contract number]* for *[insert: title and/or brief description of the Contract]* (hereinafter called "the Contract") to *[insert: complete name of Supplier, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Applicant").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum of *[insert: amount in numbers and words, for each currency of the advance payment]* is to be made to the Supplier against an advance payment guarantee.

At the request of the Applicant, we as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of *[insert amount in figures] ([insert amount in words])*<sup>1</sup> upon receipt by us of the Beneficiary's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

- (a) has used the advance payment for purposes other than toward delivery of Goods; or
- (b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Applicant has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Beneficiary's bank stating that the advance payment referred to above has been

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<sup>1</sup> The Guarantor shall insert an amount representing the amount of the advance payment and denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the Purchaser.

credited to the Applicant on its account number *[insert **number**]* at *[insert **name and address of Applicant's bank**]*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Applicant as specified in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety (90) percent of the Accepted Contract Amount, has been certified for payment, or on the *[insert **day**]* day of *[insert **month**]*, *[insert **year**]*, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees (URDG) 2010 Revision, ICC Publication No.758, except that the supporting statement under Article 15(a) is hereby excluded.

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*[signature(s)]*

*[Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.]*

### 3. INSTALLATION AND ACCEPTANCE CERTIFICATES

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#### 3. Installation and Acceptance Certificates

##### 3.1 Installation Certificate

Date: [ *insert: date* ]

Loan/Credit Number: [ *insert: loan or credit number from RFP* ]

RFP: [ *insert: title and number of RFP* ]

Contract: [ *insert: name and number of Contract* ]

To: [ *insert: name and address of Supplier* ]

Dear Sir or Madam:

Pursuant to GCC Clause 26 (Installation of the System) of the Contract entered into between yourselves and the [ *insert: name of Purchaser* ] (hereinafter the “Purchaser”) dated [ *insert: date of Contract* ], relating to the [ *insert: brief description of the Information System* ], we hereby notify you that the System (or a Subsystem or major component thereof) was deemed to have been correctly installed on the date specified below.

1. Description of the System (or relevant Subsystem or major component: [ *insert: description* ]
2. Date of Installation: [ *insert: date* ]

Notwithstanding the above, you are required to complete the outstanding items listed in the attachment to this certificate as soon as practicable. This letter shall not relieve you of your obligation to achieve Operational Acceptance of the System in accordance with the Contract nor of your obligations during the Warranty Period.

For and on behalf of the Purchaser

Signed:

Date:

in the capacity of: [ *state: “Project Manager” or specify a higher level authority in the Purchaser’s organization* ]

### 3.2 Operational Acceptance Certificate

Date: [ insert: **date** ]

Loan/Credit Number: [ insert: **loan or credit number from RFP** ]

RFP: [ insert: **title and number of RFP** ]

Contract: [ insert: **name of System or Subsystem and number of Contract** ]

To: [ insert: **name and address of Supplier** ]

Dear Sir or Madam:

Pursuant to GCC Clause 27 (Commissioning and Operational Acceptance) of the Contract entered into between yourselves and the [ insert: **name of Purchaser** ] (hereinafter the “Purchaser”) dated [ insert: **date of Contract** ], relating to the [ insert: **brief description of the Information System** ], we hereby notify you the System (or the Subsystem or major component identified below) successfully completed the Operational Acceptance Tests specified in the Contract. In accordance with the terms of the Contract, the Purchaser hereby takes over the System (or the Subsystem or major component identified below), together with the responsibility for care and custody and the risk of loss thereof on the date mentioned below.

1. Description of the System (or Subsystem or major component): [ insert: **description** ]
2. Date of Operational Acceptance: [ insert: **date** ]

This letter shall not relieve you of your remaining performance obligations under the Contract nor of your obligations during the Warranty Period.

For and on behalf of the Purchaser

Signed: \_\_\_\_\_

Date: [ insert: **date** ]

in the capacity of: [ state: **“Project Manager”** or specify a higher level authority in the Purchaser’s organization ]

## 4. CHANGE ORDER PROCEDURES AND FORMS

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Date: *[ insert: **date** ]*

Loan/Credit Number: *[ insert: **loan or credit number from RFP** ]*

RFP: *[ insert: **title and number of RFP** ]*

Contract: *[ insert: **name or System or Subsystem and number of Contract** ]*

### General

This section provides samples of procedures and forms for carrying out changes to the System during the performance of the Contract in accordance with GCC Clause 39 (Changes to the System) of the Contract.

### Change Order Log

The Supplier shall keep an up-to-date Change Order Log to show the current status of Requests for Change and Change Orders authorized or pending. Changes shall be entered regularly in the Change Order Log to ensure that the log is kept up-to-date. The Supplier shall attach a copy of the current Change Order Log in the monthly progress report to be submitted to the Purchaser.

### References to Changes

- (1) Request for Change Proposals (including Application for Change Proposals) shall be serially numbered CR-nnn.
- (2) Change Estimate Proposals shall be numbered CN-nnn.
- (3) Estimate Acceptances shall be numbered CA-nnn.
- (4) Change Proposals shall be numbered CP-nnn.
- (5) Change Orders shall be numbered CO-nnn.

On all forms, the numbering shall be determined by the original CR-nnn.

### Annexes

- 4.1 Request for Change Proposal Form
- 4.2 Change Estimate Proposal Form
- 4.3 Estimate Acceptance Form
- 4.4 Change Proposal Form
- 4.5 Change Order Form
- 4.6 Application for Change Proposal Form

## 4.1 Request for Change Proposal Form

(Purchaser's Letterhead)

Date: [ *insert: date* ]

Loan/Credit Number: [ *insert: loan or credit number from RFP* ]

RFP: [ *insert: title and number of RFP* ]

Contract: [ *insert: name of System or Subsystem or number of Contract* ]

To: [ *insert: name of Supplier and address* ]

Attention: [ *insert: name and title* ]

Dear Sir or Madam:

With reference to the above-referenced Contract, you are requested to prepare and submit a Change Proposal for the Change noted below in accordance with the following instructions within [ *insert: number* ] days of the date of this letter.

1. Title of Change: [ *insert: title* ]
2. Request for Change No./Rev.: [ *insert: number* ]
3. Originator of Change: [ *select Purchaser / Supplier (by Application for Change Proposal), and add: name of originator* ]
4. Brief Description of Change: [ *insert: description* ]
5. System (or Subsystem or major component affected by requested Change): [ *insert: description* ]
6. Technical documents and/or drawings for the request of Change:
 

|                         |             |
|-------------------------|-------------|
| Document or Drawing No. | Description |
|-------------------------|-------------|
7. Detailed conditions or special requirements of the requested Change: [ *insert: description* ]
8. Procedures to be followed:
  - (a) Your Change Proposal will have to show what effect the requested Change will have on the Contract Price.
  - (b) Your Change Proposal shall explain the time it will take to complete the requested Change and the impact, if any, it will have on the date when Operational Acceptance of the entire System agreed in the Contract.

- (c) If you believe implementation of the requested Change will have a negative impact on the quality, operability, or integrity of the System, please provide a detailed explanation, including other approaches that might achieve the same impact as the requested Change.
  - (d) You should also indicate what impact the Change will have on the number and mix of staff needed by the Supplier to perform the Contract.
  - (e) You shall not proceed with the execution of work related to the requested Change until we have accepted and confirmed the impact it will have on the Contract Price and the Implementation Schedule in writing.
9. As next step, please respond using the Change Estimate Proposal form, indicating how much it will cost you to prepare a concrete Change Proposal that will describe the proposed approach for implementing the Change, all its elements, and will also address the points in paragraph 8 above pursuant to GCC Clause 39.2.1. Your Change Estimate Proposal should contain a first approximation of the proposed approach, and implications for schedule and cost, of the Change.

For and on behalf of the Purchaser

Signed:

Date:

in the capacity of: [ state: **“Project Manager”** or specify a higher level authority in the Purchaser’s organization ]

## 4.2 Change Estimate Proposal Form

(Supplier's Letterhead)

Date: *[ insert: **date** ]*

Loan/Credit Number: *[ insert: **loan or credit number from RFP** ]*

RFP: *[ insert: **title and number of RFP** ]*

Contract: *[ insert: **name of System or Subsystem and number of Contract** ]*

To: *[ insert: **name of Purchaser and address** ]*

Attention: *[ insert: **name and title** ]*

Dear Sir or Madam:

With reference to your Request for Change Proposal, we are pleased to notify you of the approximate cost of preparing the below-referenced Change in accordance with GCC Clause 39.2.1 of the Contract. We acknowledge that your agreement to the cost of preparing the Change Proposal, in accordance with GCC Clause 39.2.2, is required before we proceed to prepare the actual Change Proposal including a detailed estimate of the cost of implementing the Change itself.

1. Title of Change: *[ insert: **title** ]*
2. Request for Change No./Rev.: *[ insert: **number** ]*
3. Brief Description of Change (including proposed implementation approach): *[ insert: **description** ]*
4. Schedule Impact of Change (initial estimate): *[ insert: **description** ]*
5. Initial Cost Estimate for Implementing the Change: *[ insert: **initial cost estimate** ]*
6. Cost for Preparation of Change Proposal: *[ insert: **cost in the currencies of the Contract** ]*, as detailed below in the breakdown of prices, rates, and quantities.

For and on behalf of the Supplier

Signed:

Date:

in the capacity of: *[ state: **"Supplier's Representative"** or specify a other higher level authority in the Supplier's organization ]*

### 4.3 Estimate Acceptance Form

(Purchaser's Letterhead)

Date: [ insert: **date** ]

Loan/Credit Number: [ insert: **loan or credit number from RFP** ]

RFP: [ insert: **title and number of RFP** ]

Contract: [ insert: **name of System or Subsystem and number of Contract** ]

To: [ insert: **name of Supplier and address** ]

Attention: [ insert: **name and title** ]

Dear Sir or Madam:

We hereby accept your Change Estimate and agree that you should proceed with the preparation of a formal Change Proposal.

1. Title of Change: [ insert: **title** ]
2. Request for Change No./Rev.: [ insert: **request number / revision** ]
3. Change Estimate Proposal No./Rev.: [ insert: **proposal number / revision** ]
4. Estimate Acceptance No./Rev.: [ insert: **estimate number / revision** ]
5. Brief Description of Change: [ insert: **description** ]
6. Other Terms and Conditions: [ insert: **other terms and conditions** ]

In the event that we decide not to order the Change referenced above, you shall be entitled to compensation for the cost of preparing the Change Proposal up to the amount estimated for this purpose in the Change Estimate Proposal, in accordance with GCC Clause 39 of the General Conditions of Contract.

For and on behalf of the Purchaser

Signed:

Date:

in the capacity of: [ state: **“Project Manager”** or specify a higher level authority in the Purchaser's organization ]

## 4.4 Change Proposal Form

(Supplier's Letterhead)

Date: [ insert: **date** ]

Loan/Credit Number: [ insert: **loan or credit number from RFP** ]

RFP: [ insert: **title and number of RFP** ]

Contract: [ insert: **name of System or Subsystem and number of Contract** ]

To: [ insert: **name of Purchaser and address** ]

Attention: [ insert: **name and title** ]

Dear Sir or Madam:

In response to your Request for Change Proposal No. [ insert: **number** ], we hereby submit our proposal as follows:

1. Title of Change: [ insert: **name** ]
2. Change Proposal No./Rev.: [ insert: **proposal number/revision** ]
3. Originator of Change: [ select: **Purchaser / Supplier**; and add: **name** ]
4. Brief Description of Change: [ insert: **description** ]
5. Reasons for Change: [ insert: **reason** ]
6. The System Subsystem, major component, or equipment that will be affected by the requested Change: [ insert: **description** ]
7. Technical documents and/or drawings for the requested Change:
 

| Document or Drawing No. | Description |
|-------------------------|-------------|
|-------------------------|-------------|
8. Estimate of the increase/decrease to the Contract Price resulting from the proposed Change: [ insert: **amount in currencies of Contract** ], as detailed below in the breakdown of prices, rates, and quantities.
 

Total lump sum cost of the Change:

Cost to prepare this Change Proposal (i.e., the amount payable if the Change is not accepted, limited as provided by GCC Clause 39.2.6):
9. Additional Time for Achieving Operational Acceptance required due to the Change: [ insert: **amount in days / weeks** ]

10. Effect on the Functional Guarantees: *[ insert: **description** ]*
11. Effect on the other terms and conditions of the Contract: *[ insert: **description** ]*
12. Validity of this Proposal: for a period of *[ insert: **number** ]* days after receipt of this Proposal by the Purchaser
13. Procedures to be followed:
  - (a) You are requested to notify us of your acceptance, comments, or rejection of this detailed Change Proposal within *[ insert: **number** ]* days from your receipt of this Proposal.
  - (b) The amount of any increase and/or decrease shall be taken into account in the adjustment of the Contract Price.

For and on behalf of the Supplier

Signed:

Date:

in the capacity of: *[ state: “**Supplier’s Representative**” or specify a other higher level authority in the Supplier’s organization ]*



For and on behalf of the Supplier

Signed: \_\_\_\_\_

Date: [ insert **date** ]

in the capacity of: [ state **“Supplier’s Representative”** or specify a higher level authority in the Supplier’s organization ]

## 4.6 Application for Change Proposal Form

(Supplier's Letterhead)

Date: [ insert: **date** ]

Loan/Credit Number: [ insert: **loan or credit number from RFP** ]

RFP: [ insert: **title and number of RFP** ]

Contract: [ insert: **name of System or Subsystem and number of Contract** ]

To: [ insert: **name of Purchaser and address** ]

Attention: [ insert: **name and title** ]

Dear Sir or Madam:

We hereby propose that the below-mentioned work be treated as a Change to the System.

1. Title of Change: [ insert: **name** ]
2. Application for Change Proposal No./Rev.: [ insert: **number / revision** ] dated: [ insert: **date** ]
3. Brief Description of Change: [ insert: **description** ]
4. Reasons for Change: [ insert: **description** ]
5. Order of Magnitude Estimation: [ insert: **amount in currencies of the Contract** ]
6. Schedule Impact of Change: [ insert: **description** ]
7. Effect on Functional Guarantees, if any: [ insert: **description** ]
8. Appendix: [ insert: **titles (if any); otherwise state "none"** ]

For and on behalf of the Supplier

Signed:

Date:

in the capacity of: [ state: **"Supplier's Representative"** or specify a higher level authority in the Supplier's organization ]

## **Annex Tech-I**

## Rated Qualification Scoring Criteria

| Technical Factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Technical Sub-Factor                                             | Weight     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|------------|
| <p><b>A. Proposed Solution Exceeding the Minium Requirements Scoring Basis:</b><br/>           Score from 0 to 4 will be calculated and assigned based upon the vendor’s input against the five scoring levels (<b>Out of the box (4), Customisation (3), 3rd Party (2), To be Developed (1), Not Available (0)</b>) for each feature listed in the Annex A, Annex B, Annex C, Annex D, and Annex E against each and every components as listed.</p> <p><b>Documents Required:</b><br/>           Duly completed Annex A, Annex B, Annex C, Annex D, and Annex E, ensuring that only one scoring level is selected for each feature listed under all components within the respective annexes (A–E).</p> <p>Each selected scoring level must be supported by <b>valid documentary evidence</b>, with clear references provided within the Bid document in accordance with <b>Annex – H</b>.</p> | National Open Data Portal ( <b>Annex-A</b> )                     | <b>20%</b> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Api Gateway ( <b>Annex-B</b> )                                   | <b>12%</b> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Sandbox Environment & Developer Workspace ( <b>Annex-C</b> )     | <b>05%</b> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Ai/ML Repository & Model Lifecycle Management ( <b>Annex-D</b> ) | <b>08%</b> |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Etl Data Ingestion Transformation and Loading ( <b>Annex-E</b> ) | <b>10%</b> |
| <p><b>B. National Open Data Ecosystem Architecture Scoring Basis:</b><br/>           Score will be calculated based upon the vendor’s provided Evidence listed along with all other requirements inside <b>Annex – F</b>.</p> <p><b>Documents Required:</b><br/>           All required Evidence listed inside <b>Annex – F</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | National Open Data Ecosystem Architecture ( <b>Annex – F</b> )   | <b>20%</b> |
| <p><b>C. Infrastructure Sizing Scoring Basis:</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Infrastructure Sizing <b>Annex – G.</b>                          | <b>10%</b> |

| Technical Factor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Technical Sub-Factor                                        | Weight             |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|--------------------|
| <p>Score will be calculated based upon the vendor's provided infrastructure sizing inside <b>Resource Parameters to be Declared table</b> in line with all requirements / evidence and other details inside <b>Annex – G</b>.</p> <p><b>Documents Required:</b><br/>Duly filled Resource Parameters to be Declared table (Check Annex – G)<br/>Supporting documents if any.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                             |                    |
| <p><b>D. Key Personnel — Evaluation Criteria</b><br/><b>Scoring Basis:</b><br/>Evaluation criteria and scoring methodology for assessing Key Personnel proposed by the Vendor for each role is scored across up to three criteria: Educational Qualification, Relevant Experience, and — where well-known professional certifications exist for that discipline — Professional Certifications. For roles where no widely recognised professional certification exists, the certification criterion is marked N/A and carries no score; the weighting is redistributed to Experience. Pls check Annex I for further details.</p> <p><b>Documents Required:</b><br/>CVs, academic certificates, and project references are mandatory supporting documents used to verify and substantiate scoring as per <b>Annex I</b>.</p> | <p><b>Key Personnel — Evaluation Criteria Annex – I</b></p> | <p><b>15%</b></p>  |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><b>GRAND TOTAL</b></p>                                   | <p><b>100%</b></p> |

## Annex - A

| Component: National Open Data Portal (Scoring Weight: 20%) |                                                               |                                                                                                                                                           |                   |               |                     |                                                                                       |                                      |                             |
|------------------------------------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|---------------------|---------------------------------------------------------------------------------------|--------------------------------------|-----------------------------|
| Features                                                   |                                                               | Scoring Level Evaluation Sheet<br>(You can select only one scoring level against each feature)<br><i>Note: Check Annex-H to understand scoring levels</i> |                   |               |                     | References in BID<br><i>Note: Check Annex-H to understand References requirements</i> |                                      |                             |
|                                                            |                                                               | Out of the box (4)                                                                                                                                        | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0)                                                                     | OEM's Official Product Documentation | Other Acceptable References |
| Category A: Metadata & Catalog Management                  |                                                               |                                                                                                                                                           |                   |               |                     |                                                                                       |                                      |                             |
| A1                                                         | Centralized metadata catalog (searchable dataset index)       |                                                                                                                                                           |                   |               |                     |                                                                                       |                                      |                             |
| A2                                                         | Metadata schema import and export (multiple standard formats) |                                                                                                                                                           |                   |               |                     |                                                                                       |                                      |                             |
| A3                                                         | Structured linked-data metadata representation support        |                                                                                                                                                           |                   |               |                     |                                                                                       |                                      |                             |

|     |                                                                  |  |  |  |  |  |  |  |
|-----|------------------------------------------------------------------|--|--|--|--|--|--|--|
| A4  | Geospatial metadata standard support for spatial datasets        |  |  |  |  |  |  |  |
| A5  | Configurable metadata fields and custom schema definitions       |  |  |  |  |  |  |  |
| A6  | Pre-defined metadata entry templates for data publishers         |  |  |  |  |  |  |  |
| A7  | Bulk metadata upload and batch editing capability                |  |  |  |  |  |  |  |
| A8  | Full version history and change tracking for metadata records    |  |  |  |  |  |  |  |
| A9  | Mandatory field enforcement and metadata completeness validation |  |  |  |  |  |  |  |
| A10 | Automated metadata quality scoring and completeness indicators   |  |  |  |  |  |  |  |

|     |                                                                          |  |  |  |  |  |  |  |
|-----|--------------------------------------------------------------------------|--|--|--|--|--|--|--|
| A11 | Automated harvesting of metadata catalogs from external data portals     |  |  |  |  |  |  |  |
| A12 | Metadata export in multiple machine-readable formats                     |  |  |  |  |  |  |  |
| A13 | Structured, machine-readable open license assignment per dataset         |  |  |  |  |  |  |  |
| A14 | Automated extraction of technical metadata upon dataset upload           |  |  |  |  |  |  |  |
| A15 | Multi-language metadata entry and display support                        |  |  |  |  |  |  |  |
| A16 | Support for controlled vocabularies and hierarchical category taxonomies |  |  |  |  |  |  |  |
| A17 | Metadata field mapping between different                                 |  |  |  |  |  |  |  |

|                                                     | schema standards                                                                 |                    |                   |               |                     |                   |                                      |                             |
|-----------------------------------------------------|----------------------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| A18                                                 | Immutable audit log of all metadata creation, modification, and deletion actions |                    |                   |               |                     |                   |                                      |                             |
| A19                                                 | Persistent unique identifiers for datasets ensuring stable long-term access      |                    |                   |               |                     |                   |                                      |                             |
| A20                                                 | Automated alerts to publishers when dataset metadata becomes stale or outdated   |                    |                   |               |                     |                   |                                      |                             |
| <b>Category B: Dataset Management &amp; Formats</b> |                                                                                  |                    |                   |               |                     |                   |                                      |                             |
| #                                                   | Feature                                                                          | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| B1                                                  | Ingestion and storage of structured tabular data in                              |                    |                   |               |                     |                   |                                      |                             |

|    |                                                                                                   |  |  |  |  |  |  |  |
|----|---------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|    | common file formats                                                                               |  |  |  |  |  |  |  |
| B2 | Native support for semi-structured data formats including JSON and linked-data variants           |  |  |  |  |  |  |  |
| B3 | Ingestion of XML and linked-data serialization formats                                            |  |  |  |  |  |  |  |
| B4 | Ingestion and storage of vector and raster geospatial file formats                                |  |  |  |  |  |  |  |
| B5 | Direct database connectivity for automated data extraction from source systems                    |  |  |  |  |  |  |  |
| B6 | Spatial database backend providing advanced geospatial query, indexing, and analysis capabilities |  |  |  |  |  |  |  |
| B7 | Support for ingestion and                                                                         |  |  |  |  |  |  |  |

|     |                                                                                                   |  |  |  |  |  |  |  |
|-----|---------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|     | storage of large datasets exceeding standard file size limits                                     |  |  |  |  |  |  |  |
| B8  | Streaming download capability for large files without requiring full pre-loading                  |  |  |  |  |  |  |  |
| B9  | Queryable data store enabling server-side filtering, sorting, and field selection on tabular data |  |  |  |  |  |  |  |
| B10 | Granular row- and column-level access control for sensitive dataset fields                        |  |  |  |  |  |  |  |
| B11 | Full dataset version history with ability to access, compare, and restore prior versions          |  |  |  |  |  |  |  |
| B12 | Configurable automated refresh schedules for datasets                                             |  |  |  |  |  |  |  |

|     |                                                                                                |  |  |  |  |  |  |  |
|-----|------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|     | sourced from external systems                                                                  |  |  |  |  |  |  |  |
| B13 | Automated harvesting of dataset files from remote URLs and file-based sources                  |  |  |  |  |  |  |  |
| B14 | End-to-end data lineage tracking recording dataset origin, transformations, and update history |  |  |  |  |  |  |  |
| B15 | Structured tabular schema definitions describing column types, constraints, and relationships  |  |  |  |  |  |  |  |
| B16 | In-browser preview of dataset content prior to download                                        |  |  |  |  |  |  |  |
| B17 | Built-in data validation and basic cleansing tools for uploaded datasets                       |  |  |  |  |  |  |  |
| B18 | Persistent unique identifiers                                                                  |  |  |  |  |  |  |  |

|                                               |                                                                                                        |                           |                          |                      |                            |                          |                                             |                                    |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------|--------------------------|----------------------|----------------------------|--------------------------|---------------------------------------------|------------------------------------|
|                                               | assigned to each dataset for stable referencing                                                        |                           |                          |                      |                            |                          |                                             |                                    |
| B19                                           | Configurable embargo period allowing datasets to be prepared before public release                     |                           |                          |                      |                            |                          |                                             |                                    |
| B20                                           | Configurable archival and retention policies for deprecated or superseded datasets                     |                           |                          |                      |                            |                          |                                             |                                    |
| <b>Category C: API &amp; Interoperability</b> |                                                                                                        |                           |                          |                      |                            |                          |                                             |                                    |
| <b>#</b>                                      | <b>Feature</b>                                                                                         | <b>Out of the box (4)</b> | <b>Customisation (3)</b> | <b>3rd Party (2)</b> | <b>To be Developed (1)</b> | <b>Not Available (0)</b> | <b>OEM's Official Product Documentation</b> | <b>Other Acceptable References</b> |
| C1                                            | Automatically generated programmatic access interface for all published datasets and catalog functions |                           |                          |                      |                            |                          |                                             |                                    |
| C2                                            | API support for server-side filtering, sorting, and                                                    |                           |                          |                      |                            |                          |                                             |                                    |

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|    | paginated result retrieval                                                                 |  |  |  |  |  |  |  |
| C3 | API support for spatial query operators including bounding box and proximity filtering     |  |  |  |  |  |  |  |
| C4 | API endpoints enabling filtering of catalog results by metadata attributes                 |  |  |  |  |  |  |  |
| C5 | Interoperable data query endpoints compatible with widely adopted open query standards     |  |  |  |  |  |  |  |
| C6 | Flexible query interface allowing consumers to request precisely the data fields they need |  |  |  |  |  |  |  |
| C7 | Automatically generated and maintained interactive API reference documentation             |  |  |  |  |  |  |  |

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| C8  | Self-service API credential issuance, management, and revocation for registered consumers                |  |  |  |  |  |  |  |
| C9  | Token-based authentication and authorization support for secure API access                               |  |  |  |  |  |  |  |
| C10 | Configurable API rate limiting and usage quota enforcement per consumer                                  |  |  |  |  |  |  |  |
| C11 | Cross-origin access control support enabling browser-based API consumption from third-party applications |  |  |  |  |  |  |  |
| C12 | API endpoints exposing dataset schema and field definitions for programmatic discovery                   |  |  |  |  |  |  |  |

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| C13 | Linked-data serialization support in API responses for semantic interoperability                       |  |  |  |  |  |  |  |
| C14 | Semantic query interface for linked-data datasets enabling graph-based retrieval                       |  |  |  |  |  |  |  |
| C15 | Event-driven notification mechanism alerting subscribed systems when datasets are updated or published |  |  |  |  |  |  |  |
| C16 | Bulk data export API enabling complete dataset retrieval in a single programmatic request              |  |  |  |  |  |  |  |
| C17 | Automated generation of client libraries in common programming languages for API integration           |  |  |  |  |  |  |  |

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| C18 | Real-time and historical analytics on API call volumes, latency, and consumer activity                  |  |  |  |  |  |  |  |
| C19 | API design conforming to open, published interface standards ensuring broad interoperability            |  |  |  |  |  |  |  |
| C20 | Transparent proxying and routing of API requests to underlying backend data services                    |  |  |  |  |  |  |  |
| C21 | Dedicated sandbox API credentials providing access to test data for development and integration testing |  |  |  |  |  |  |  |
| C22 | Configurable access tiers defining different rate limits, quotas, and data access levels per            |  |  |  |  |  |  |  |

|                                                                                                                                                                                                                                                                                                                                      | consumer group                                                                                          |                    |                   |               |                     |                   |                                      |                             |
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| C23                                                                                                                                                                                                                                                                                                                                  | Support for structured query syntax in API calls enabling complex server-side data filtering            |                    |                   |               |                     |                   |                                      |                             |
| C24                                                                                                                                                                                                                                                                                                                                  | Ability to express and execute structured data queries against the platform via standard web interfaces |                    |                   |               |                     |                   |                                      |                             |
| <b>Category D: Data Visualization &amp; Exploration</b> <i>(While the platform shall provide in-built charting and mapping tools, it must also be architected to allow for the easy embedding of visualizations from third-party tools (e.g., Datawrapper, Flourish) to enable more advanced and customizable user experiences.)</i> |                                                                                                         |                    |                   |               |                     |                   |                                      |                             |
| #                                                                                                                                                                                                                                                                                                                                    | Feature                                                                                                 | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| D1                                                                                                                                                                                                                                                                                                                                   | In-browser interactive tabular data preview with sorting, filtering, and pagination                     |                    |                   |               |                     |                   |                                      |                             |
| D2                                                                                                                                                                                                                                                                                                                                   | Dataset download in multiple output formats directly                                                    |                    |                   |               |                     |                   |                                      |                             |

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|    | from the portal interface                                                              |  |  |  |  |  |  |  |
| D3 | Built-in chart generation tool producing standard visualizations from tabular datasets |  |  |  |  |  |  |  |
| D4 | Time-series, comparative, and statistical charts                                       |  |  |  |  |  |  |  |
| D5 | Interactive map viewer for rendering and exploring geospatial datasets in the browser  |  |  |  |  |  |  |  |
| D6 | Simultaneous rendering of multiple geospatial data layers on an interactive map        |  |  |  |  |  |  |  |
| D7 | User-configurable visual styling for geospatial map layers                             |  |  |  |  |  |  |  |
| D8 | Animated or slider-based temporal visualization of geospatial data                     |  |  |  |  |  |  |  |

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|     | changes over time                                                                              |  |  |  |  |  |  |  |
| D9  | Contextual API code examples displayed alongside dataset pages to guide developer integration  |  |  |  |  |  |  |  |
| D10 | User-configurable dashboards combining multiple dataset visualizations into a single view      |  |  |  |  |  |  |  |
| D11 | Pre-built dashboard templates for common data presentation patterns                            |  |  |  |  |  |  |  |
| D12 | Embeddable visualization widgets allowing charts and maps to be hosted on third-party websites |  |  |  |  |  |  |  |
| D13 | Access control at the individual visualization level restricting visibility to                 |  |  |  |  |  |  |  |

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|     | authorized users                                                                                                    |  |  |  |  |  |  |  |
| D14 | Intelligent recommendation of suitable visualization types based on dataset structure and data types                |  |  |  |  |  |  |  |
| D15 | Automated statistical profiling of datasets displaying field distributions, null rates, and data quality indicators |  |  |  |  |  |  |  |
| D16 | Browser-based interactive tool for discovering, testing, and executing API calls against live datasets              |  |  |  |  |  |  |  |
| D17 | Live visualization capability for datasets updated via real-time data feeds                                         |  |  |  |  |  |  |  |
| D18 | Configurable branding and visual theme customization                                                                |  |  |  |  |  |  |  |

|                                           | for portal presentation                                                                         |                    |                   |               |                     |                   |                                      |                             |
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| D19                                       | No-code visual editor enabling users to build and customize charts and dashboards interactively |                    |                   |               |                     |                   |                                      |                             |
| D20                                       | Fully responsive interface ensuring usability across desktop, tablet, and mobile devices        |                    |                   |               |                     |                   |                                      |                             |
| <b>Category E: Search &amp; Discovery</b> |                                                                                                 |                    |                   |               |                     |                   |                                      |                             |
| #                                         | Feature                                                                                         | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| E1                                        | Full-text search across all metadata fields including title, description, tags, and publisher   |                    |                   |               |                     |                   |                                      |                             |
| E2                                        | Search capability extending into dataset content and resource files, not                        |                    |                   |               |                     |                   |                                      |                             |

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|    | limited to metadata                                                                                              |  |  |  |  |  |  |  |
| E3 | Multi-dimensional faceted filtering allowing users to narrow results by format, category, organization, and date |  |  |  |  |  |  |  |
| E4 | Map-based spatial search enabling dataset discovery by geographic area or bounding box                           |  |  |  |  |  |  |  |
| E5 | Date-range filtering to discover datasets by temporal coverage or publication period                             |  |  |  |  |  |  |  |
| E6 | Real-time search suggestions and autocomplete to accelerate dataset discovery                                    |  |  |  |  |  |  |  |
| E7 | Meaning-based search                                                                                             |  |  |  |  |  |  |  |

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|     | capability<br>returning<br>contextually<br>relevant results<br>beyond exact<br>keyword<br>matches                      |  |  |  |  |  |  |  |
| E8  | Configurable<br>relevancy<br>ranking<br>allowing<br>administrators<br>to tune search<br>result ordering                |  |  |  |  |  |  |  |
| E9  | Search<br>functionality<br>supporting<br>queries and<br>results in<br>multiple<br>languages                            |  |  |  |  |  |  |  |
| E10 | Programmatic<br>search interface<br>exposing full<br>catalog search<br>functionality to<br>external<br>applications    |  |  |  |  |  |  |  |
| E11 | Unified search<br>interface<br>spanning<br>datasets<br>harvested from<br>multiple<br>federated<br>external<br>catalogs |  |  |  |  |  |  |  |

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| E12 | Filtering of search results by open license type to support reuse requirements                            |  |  |  |  |  |  |  |
| E13 | Search result ranking incorporating dataset usage frequency, download counts, and user engagement signals |  |  |  |  |  |  |  |
| E14 | Hierarchical category and theme-based filters aligned to a configurable classification taxonomy           |  |  |  |  |  |  |  |
| E15 | Integrated discovery of geospatial datasets across federated spatial data catalogs                        |  |  |  |  |  |  |  |
| E16 | Automated related dataset suggestions presented to users based on                                         |  |  |  |  |  |  |  |

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|                                                        | current viewing context                                                                                       |                    |                   |               |                     |                   |                                      |                             |
| E17                                                    | Analytics on search query patterns, zero-result searches, and popular discovery terms                         |                    |                   |               |                     |                   |                                      |                             |
| E18                                                    | Search API designed for integration with external portals, applications, and aggregators                      |                    |                   |               |                     |                   |                                      |                             |
| <b>Category F: Publisher &amp; Workflow Management</b> |                                                                                                               |                    |                   |               |                     |                   |                                      |                             |
| #                                                      | Feature                                                                                                       | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| F1                                                     | Multi-organization structure enabling distinct government agencies to manage their own datasets independently |                    |                   |               |                     |                   |                                      |                             |
| F2                                                     | Hierarchical role structure with defined permissions at system, organization,                                 |                    |                   |               |                     |                   |                                      |                             |

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|    | and dataset levels                                                                                 |  |  |  |  |  |  |  |
| F3 | Administrator-defined custom roles with configurable permission sets beyond built-in defaults      |  |  |  |  |  |  |  |
| F4 | Configurable multi-stage dataset publishing workflow with state-based progression controls         |  |  |  |  |  |  |  |
| F5 | Centralized queue for reviewers and approvers to action datasets pending publication clearance     |  |  |  |  |  |  |  |
| F6 | Organization-level dashboards showing dataset counts, publication status, and data quality metrics |  |  |  |  |  |  |  |
| F7 | Batch dataset import and onboarding tools for                                                      |  |  |  |  |  |  |  |

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|     | migrating large volumes of existing datasets                                                     |  |  |  |  |  |  |  |
| F8  | Organization-level default settings for metadata fields, licenses, and publishing configurations |  |  |  |  |  |  |  |
| F9  | Configurable storage and dataset count quotas enforced per publishing organization               |  |  |  |  |  |  |  |
| F10 | Detailed activity logs recording all dataset and user actions performed within each organization |  |  |  |  |  |  |  |
| F11 | Ability to transfer dataset ownership between users or organizations within the platform         |  |  |  |  |  |  |  |
| F12 | Delegation of publishing and approval responsibilities                                           |  |  |  |  |  |  |  |

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|     | to designated users within an organization                                                                       |  |  |  |  |  |  |  |
| F13 | Automated publisher performance scorecards measuring metadata quality, publication frequency, and data freshness |  |  |  |  |  |  |  |
| F14 | Automated notifications to publishers when datasets have not been updated beyond a configured threshold          |  |  |  |  |  |  |  |
| F15 | Full public-view preview of a dataset page before committing to publication                                      |  |  |  |  |  |  |  |
| F16 | Dedicated API credentials for publisher-level programmatic dataset upload and management                         |  |  |  |  |  |  |  |
| F17 | Contextual in-platform guidance, help                                                                            |  |  |  |  |  |  |  |

|                                                         | text, and training materials for data publishers                                                         |                    |                   |               |                     |                   |                                      |                             |
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| <b>Category G: Governance, Quality &amp; Compliance</b> |                                                                                                          |                    |                   |               |                     |                   |                                      |                             |
| #                                                       | Feature                                                                                                  | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| G1                                                      | Automated validation checks assessing dataset completeness, format correctness, and structural integrity |                    |                   |               |                     |                   |                                      |                             |
| G2                                                      | Quantitative scoring of metadata records against completeness and standard conformance criteria          |                    |                   |               |                     |                   |                                      |                             |
| G3                                                      | Automated scanning of uploaded datasets to detect potentially sensitive or personally                    |                    |                   |               |                     |                   |                                      |                             |

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|    | identifiable information                                                                                             |  |  |  |  |  |  |  |
| G4 | System-enforced license assignment ensuring all published datasets carry a valid open license declaration            |  |  |  |  |  |  |  |
| G5 | Configurable data classification tagging enabling sensitivity-based access control and publication rules             |  |  |  |  |  |  |  |
| G6 | Administrative dashboard displaying platform-wide compliance with data governance policies and publication standards |  |  |  |  |  |  |  |
| G7 | Composite quality index aggregating metadata completeness, freshness, and                                            |  |  |  |  |  |  |  |

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|     | format compliance per dataset                                                                               |  |  |  |  |  |  |  |
| G8  | Automated conformance checking of datasets and metadata against defined open data standards                 |  |  |  |  |  |  |  |
| G9  | Automated enforcement of defined access control policies restricting dataset visibility to authorized users |  |  |  |  |  |  |  |
| G10 | Configurable data retention and expiry policies governing how long datasets are stored and accessible       |  |  |  |  |  |  |  |
| G11 | Configurable legal notices, terms of use, and disclaimer text displayed with published datasets             |  |  |  |  |  |  |  |
| G12 | Tamper-evident audit trail of all                                                                           |  |  |  |  |  |  |  |

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|     | governance actions including approvals, policy changes, and access events                           |  |  |  |  |  |  |  |
| G13 | Enforcement of open format and metadata standard requirements as a condition of dataset publication |  |  |  |  |  |  |  |
| G14 | Validation of uploaded dataset structure against declared schemas before publication is permitted   |  |  |  |  |  |  |  |
| G15 | Automated dataset expiry and archival workflow triggered by configurable lifecycle rules            |  |  |  |  |  |  |  |
| G16 | Exportable compliance reports summarizing platform adherence to data                                |  |  |  |  |  |  |  |

|                                                | governance and publication standards                                                                            |                    |                   |               |                     |                   |                                      |                             |
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| <b>Category H: Harvesting &amp; Federation</b> |                                                                                                                 |                    |                   |               |                     |                   |                                      |                             |
| #                                              | Feature                                                                                                         | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| H1                                             | Scheduled automated harvesting of metadata from external open data portals using standard catalog protocols     |                    |                   |               |                     |                   |                                      |                             |
| H2                                             | Federated catalog search                                                                                        |                    |                   |               |                     |                   |                                      |                             |
| H3                                             | Administrator-configurable harvest frequency and scheduling for each registered external source                 |                    |                   |               |                     |                   |                                      |                             |
| H4                                             | Extensible connector framework supporting addition of new harvest source types without core system modification |                    |                   |               |                     |                   |                                      |                             |

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| H5 | Harvesting of spatial dataset metadata from geographic information catalog services                       |  |  |  |  |  |  |  |
| H6 | Automated ingestion of datasets and metadata from external sources via programmatic API interfaces        |  |  |  |  |  |  |  |
| H7 | Automated retrieval of datasets from file-based transfer sources including secure file transfer endpoints |  |  |  |  |  |  |  |
| H8 | In-pipeline data transformation and schema mapping applied to harvested content before catalog ingestion  |  |  |  |  |  |  |  |
| H9 | Configurable rules governing how conflicts between harvested and existing                                 |  |  |  |  |  |  |  |

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|     | metadata records are resolved                                                                            |  |  |  |  |  |  |  |
| H10 | Recording of harvest source, timestamp, and transformation history for all harvested datasets            |  |  |  |  |  |  |  |
| H11 | Event-driven synchronization triggered by source system notifications when datasets are updated          |  |  |  |  |  |  |  |
| H12 | Rate-controlled harvesting to prevent overloading source systems during data ingestion operations        |  |  |  |  |  |  |  |
| H13 | Administrative dashboard displaying harvest job history, failure rates, and error diagnostics per source |  |  |  |  |  |  |  |
| H14 | Harvesting of geospatial metadata from spatial catalog                                                   |  |  |  |  |  |  |  |

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|     | services using open catalog interface protocols                                                        |  |  |  |  |  |  |  |
| H15 | Configurable field-level mapping rules transforming source metadata schemas into the platform standard |  |  |  |  |  |  |  |
| H16 | Automated synchronization of datasets directly from relational database sources on a scheduled basis   |  |  |  |  |  |  |  |
| H17 | Harvesting of datasets from other open data portal platforms using their published catalog APIs        |  |  |  |  |  |  |  |
| H18 | Efficient incremental harvest mode retrieving only new or modified records since the last harvest run  |  |  |  |  |  |  |  |

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| H19                                              | Administrative interface for adding, configuring, enabling, and monitoring harvest source connections        |                           |                          |                      |                            |                          |                                             |                                    |
| H20                                              | Harvesting capability targeting national or sector government data registries and authoritative data sources |                           |                          |                      |                            |                          |                                             |                                    |
| <b>Category I: Geospatial (GIS) Capabilities</b> |                                                                                                              |                           |                          |                      |                            |                          |                                             |                                    |
| <b>#</b>                                         | <b>Feature</b>                                                                                               | <b>Out of the box (4)</b> | <b>Customisation (3)</b> | <b>3rd Party (2)</b> | <b>To be Developed (1)</b> | <b>Not Available (0)</b> | <b>OEM's Official Product Documentation</b> | <b>Other Acceptable References</b> |
| I1                                               | In-browser preview of uploaded geospatial datasets rendered on an interactive map                            |                           |                          |                      |                            |                          |                                             |                                    |
| I2                                               | Integration with external spatial data service endpoints for rendering and querying                          |                           |                          |                      |                            |                          |                                             |                                    |

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|    | geographic layers                                                                                          |  |  |  |  |  |  |  |
| I3 | Integration capability with enterprise geographic information system platforms via open service interfaces |  |  |  |  |  |  |  |
| I4 | API support for querying individual geographic features and their attributes within a dataset              |  |  |  |  |  |  |  |
| I5 | Geospatial indexing of dataset coordinates and boundaries enabling efficient spatial search and filtering  |  |  |  |  |  |  |  |
| I6 | Server-side generation of pre-rendered map tiles for performant rendering of large geospatial datasets     |  |  |  |  |  |  |  |
| I7 | Visual styling configuration                                                                               |  |  |  |  |  |  |  |

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|     | tool for controlling color, opacity, and symbology of rendered geographic layers                                        |  |  |  |  |  |  |  |
| I8  | Automatic coordinate reference system reprojection enabling consistent display across datasets in different projections |  |  |  |  |  |  |  |
| I9  | Built-in spatial analysis operations such as area calculation, proximity analysis, and feature aggregation              |  |  |  |  |  |  |  |
| I10 | Temporal animation or slider-based playback of geospatial datasets showing change over time                             |  |  |  |  |  |  |  |
| I11 | In-platform editing of                                                                                                  |  |  |  |  |  |  |  |

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|     | geospatial metadata fields including bounding box, coordinate system, and spatial resolution             |  |  |  |  |  |  |  |
| I12 | Storage, preview, and download support for both vector feature datasets and raster imagery datasets      |  |  |  |  |  |  |  |
| I13 | PostGIS integration                                                                                      |  |  |  |  |  |  |  |
| I14 | Address-to-coordinate and coordinate-to-address resolution capability for location-aware data operations |  |  |  |  |  |  |  |
| I15 | Harvesting of geospatial catalog records from spatial data infrastructure services                       |  |  |  |  |  |  |  |
| I16 | Optimized server-side rendering pipeline                                                                 |  |  |  |  |  |  |  |

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|     | capable of handling large geospatial datasets at interactive speeds                                          |  |  |  |  |  |  |  |
| I17 | Three-dimensional terrain and feature visualization capability for elevation and volumetric datasets         |  |  |  |  |  |  |  |
| I18 | Server-side analytical processing of raster datasets including band calculation and zonal statistics         |  |  |  |  |  |  |  |
| I19 | Delivery of geospatial features as efficient vector tiles enabling smooth client-side map rendering at scale |  |  |  |  |  |  |  |
| I20 | Configurable geographic event triggers generating alerts when spatial conditions are                         |  |  |  |  |  |  |  |

|                                                               | met in monitored datasets                                                                                    |                    |                   |               |                     |                   |                                      |                             |
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| <b>Categories J: User Engagement &amp; Community Features</b> |                                                                                                              |                    |                   |               |                     |                   |                                      |                             |
| #                                                             | Feature                                                                                                      | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| J1                                                            | Public commenting facility on dataset pages enabling users to provide feedback and raise data quality issues |                    |                   |               |                     |                   |                                      |                             |
| J2                                                            | Administrative tools to review, approve, reject, and remove user-submitted comments                          |                    |                   |               |                     |                   |                                      |                             |
| J3                                                            | User rating and review system enabling qualitative feedback on dataset usefulness and quality                |                    |                   |               |                     |                   |                                      |                             |
| J4                                                            | User endorsement mechanism allowing visitors to                                                              |                    |                   |               |                     |                   |                                      |                             |

|    |                                                                                                                  |  |  |  |  |  |  |  |
|----|------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|    | signal dataset relevance and popularity                                                                          |  |  |  |  |  |  |  |
| J5 | Curated public gallery showcasing applications and use cases built using portal datasets                         |  |  |  |  |  |  |  |
| J6 | Submission mechanism for developers to register and showcase applications built on portal data                   |  |  |  |  |  |  |  |
| J7 | Shareable dataset URLs and social sharing capability for extending dataset reach                                 |  |  |  |  |  |  |  |
| J8 | Subscription mechanism enabling users to follow specific datasets or publishers and receive update notifications |  |  |  |  |  |  |  |
| J9 | Automated email or in-platform                                                                                   |  |  |  |  |  |  |  |

|     |                                                                                                                     |  |  |  |  |  |  |  |
|-----|---------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|     | notifications to subscribed users when followed datasets are updated                                                |  |  |  |  |  |  |  |
| J10 | Public data request submission form enabling citizens and organizations to request publication of specific datasets |  |  |  |  |  |  |  |
| J11 | Integrated support request system for users to report issues or seek assistance with data access                    |  |  |  |  |  |  |  |
| J12 | Moderated discussion spaces enabling data users and publishers to collaborate and share insights                    |  |  |  |  |  |  |  |
| J13 | Configurable feedback and survey forms for collecting structured user input on datasets and                         |  |  |  |  |  |  |  |

|     |                                                                                                  |  |  |  |  |  |  |  |
|-----|--------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|     | portal experience                                                                                |  |  |  |  |  |  |  |
| J14 | Built-in content publishing capability for announcements, data stories, and portal news          |  |  |  |  |  |  |  |
| J15 | Community idea submission and voting mechanism for prioritizing future data publication requests |  |  |  |  |  |  |  |
| J16 | User profile pages displaying contributed datasets, comments, and engagement history             |  |  |  |  |  |  |  |
| J17 | User-contributed tagging enabling community-driven enrichment of dataset discoverability         |  |  |  |  |  |  |  |
| J18 | Collaborative dataset editing capability allowing                                                |  |  |  |  |  |  |  |

|                                               | multiple authorized users to contribute to a single dataset                                           |                    |                   |               |                     |                   |                                      |                             |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| J19                                           | Integration with crowdsourcing mechanisms enabling citizen-contributed data collection and validation |                    |                   |               |                     |                   |                                      |                             |
| J20                                           | Built-in capability to host data challenges, innovation contests, and hackathon events on the portal  |                    |                   |               |                     |                   |                                      |                             |
| <b>Category K: Analytics &amp; Monitoring</b> |                                                                                                       |                    |                   |               |                     |                   |                                      |                             |
| #                                             | Feature                                                                                               | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| K1                                            | Tracking and display of total view counts per dataset page                                            |                    |                   |               |                     |                   |                                      |                             |
| K2                                            | Tracking and display of total and per-resource download                                               |                    |                   |               |                     |                   |                                      |                             |

|    |                                                                                                                 |  |  |  |  |  |  |  |
|----|-----------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|    | counts per dataset                                                                                              |  |  |  |  |  |  |  |
| K3 | Per-endpoint API call volume, latency, and error rate analytics for platform administrators                     |  |  |  |  |  |  |  |
| K4 | Analytics dashboard showing each publishing organization's dataset output, update frequency, and quality trends |  |  |  |  |  |  |  |
| K5 | Platform-wide web traffic analytics covering visitor volumes, session duration, and page engagement             |  |  |  |  |  |  |  |
| K6 | Native administrative dashboards presenting key platform metrics without requiring external analytics tools     |  |  |  |  |  |  |  |

|     |                                                                                                           |  |  |  |  |  |  |  |
|-----|-----------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| K7  | Scheduled reports identifying datasets that have not been updated within their declared refresh frequency |  |  |  |  |  |  |  |
| K8  | Automated detection and reporting of broken resource URLs and inaccessible dataset file references        |  |  |  |  |  |  |  |
| K9  | Analytics identifying datasets with incomplete or missing mandatory metadata fields                       |  |  |  |  |  |  |  |
| K10 | Funnel analytics tracking the progression from dataset discovery through to download completion           |  |  |  |  |  |  |  |
| K11 | Configurable algorithm ranking datasets by composite                                                      |  |  |  |  |  |  |  |

|     |                                                                                                         |  |  |  |  |  |  |  |
|-----|---------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|     | engagement signals for featured placement                                                               |  |  |  |  |  |  |  |
| K12 | Analytics on search query frequency, trending topics, and zero-result search terms                      |  |  |  |  |  |  |  |
| K13 | Real-time monitoring and alerting for harvest pipeline failures and data ingestion errors               |  |  |  |  |  |  |  |
| K14 | Time-series charts tracking API response times and availability across all endpoints                    |  |  |  |  |  |  |  |
| K15 | Automated detection of unusual patterns in platform usage or dataset access indicating potential issues |  |  |  |  |  |  |  |
| K16 | Export capability for platform analytics data                                                           |  |  |  |  |  |  |  |

|     |                                                                                                           |  |  |  |  |  |  |  |
|-----|-----------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|     | to external business intelligence and reporting tools                                                     |  |  |  |  |  |  |  |
| K17 | API access to platform analytics data enabling integration with external monitoring and reporting systems |  |  |  |  |  |  |  |
| K18 | Metrics tracking storage consumption and data retention status across all datasets and organizations      |  |  |  |  |  |  |  |
| K19 | Comparative analytics dashboards enabling benchmarking of platform performance across time periods        |  |  |  |  |  |  |  |
| K20 | Automated compliance signal generation assessing each publisher against defined data                      |  |  |  |  |  |  |  |

|                                                                    | governance benchmarks                                                                                |                    |                   |               |                     |                   |                                      |                             |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| <b>Category L: Automation, Internationalization, Accessibility</b> |                                                                                                      |                    |                   |               |                     |                   |                                      |                             |
| #                                                                  | Feature                                                                                              | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| L1                                                                 | Full user interface localization supporting multiple languages across all portal pages and functions |                    |                   |               |                     |                   |                                      |                             |
| L2                                                                 | Metadata entry and display in multiple languages with per-field language tagging                     |                    |                   |               |                     |                   |                                      |                             |
| L3                                                                 | User-accessible language selector enabling on-demand switching of the interface language             |                    |                   |               |                     |                   |                                      |                             |
| L4                                                                 | Right-to-left text rendering support for languages such as Urdu and                                  |                    |                   |               |                     |                   |                                      |                             |

|    |                                                                                                                                |  |  |  |  |  |  |  |
|----|--------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|    | Arabic across all interface elements                                                                                           |  |  |  |  |  |  |  |
| L5 | Search functionality applying language-specific processing including stemming, stopwords, and character normalization          |  |  |  |  |  |  |  |
| L6 | Full conformance with Web Content Accessibility Guidelines (WCAG) 2.1 Level AA across all public and administrative interfaces |  |  |  |  |  |  |  |
| L7 | Semantic HTML structure and ARIA labeling ensuring full compatibility with screen reader assistive technology                  |  |  |  |  |  |  |  |
| L8 | Complete keyboard-only navigation                                                                                              |  |  |  |  |  |  |  |

|     |                                                                                                                      |  |  |  |  |  |  |  |
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|     | support across all interactive portal elements without requiring a mouse                                             |  |  |  |  |  |  |  |
| L9  | High-contrast visual display mode meeting accessibility contrast ratio requirements for visually impaired users      |  |  |  |  |  |  |  |
| L10 | Mandatory alternative text requirements for all images and visual content published on the portal                    |  |  |  |  |  |  |  |
| L11 | Accessibility-compliant charts and maps with text alternatives, keyboard interaction, and screen reader descriptions |  |  |  |  |  |  |  |
| L12 | Caption and transcript support for any audio or video content                                                        |  |  |  |  |  |  |  |

|     |                                                                                                                   |  |  |  |  |  |  |  |
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|     | published on the portal                                                                                           |  |  |  |  |  |  |  |
| L13 | Contextual tooltips and inline help text throughout the interface to guide users without requiring documentation  |  |  |  |  |  |  |  |
| L14 | Fully accessible data entry forms with proper labeling, error identification, and keyboard operability            |  |  |  |  |  |  |  |
| L15 | Dataset preview components meeting accessibility standards with text alternatives and navigable tabular structure |  |  |  |  |  |  |  |

## Annex – B

| <b>COMPONENT: API GATEWAY (Scoring Weight: 12%)</b>  |                                                                                       |                                                                                                                                                                      |                   |               |                     |                                                                                                  |                                      |                             |
|------------------------------------------------------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|---------------------|--------------------------------------------------------------------------------------------------|--------------------------------------|-----------------------------|
| <b>FEATURES</b>                                      |                                                                                       | <b>SCORING LEVEL EVALUATION SHEET</b><br>(You can select only one scoring level against each feature)<br><br><i>Note: Check Annex-H to understand scoring levels</i> |                   |               |                     | <b>References in BID</b><br><br><i>Note: Check Annex-H to understand References requirements</i> |                                      |                             |
|                                                      |                                                                                       | Out of the box (4)                                                                                                                                                   | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0)                                                                                | OEM's Official Product Documentation | Other Acceptable References |
| <b>Category A: API Security &amp; Access Control</b> |                                                                                       |                                                                                                                                                                      |                   |               |                     |                                                                                                  |                                      |                             |
| #                                                    | Feature                                                                               | Out of the box (4)                                                                                                                                                   | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0)                                                                                | OEM's Official Product Documentation | Other Acceptable References |
| A1                                                   | Support for industry-standard authentication protocols (e.g., OAuth2, OpenID Connect) |                                                                                                                                                                      |                   |               |                     |                                                                                                  |                                      |                             |
| A2                                                   | Ability to issue and validate API access keys for external developers                 |                                                                                                                                                                      |                   |               |                     |                                                                                                  |                                      |                             |
| A3                                                   | Support for token-based authentication, including signed tokens (e.g., JWT)           |                                                                                                                                                                      |                   |               |                     |                                                                                                  |                                      |                             |

|                                                              |                                                                             |                    |                   |               |                     |                   |                                      |                             |
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| A4                                                           | Support for secure mutual authentication between systems (mTLS capability)  |                    |                   |               |                     |                   |                                      |                             |
| A5                                                           | Role-based access control to manage permissions for organizations and users |                    |                   |               |                     |                   |                                      |                             |
| A6                                                           | Ability to configure IP-based allow/deny rules                              |                    |                   |               |                     |                   |                                      |                             |
| A7                                                           | Configurable request-rate limiting and throttling policies                  |                    |                   |               |                     |                   |                                      |                             |
| A8                                                           | Configurable quota enforcement for API usage by consumer groups             |                    |                   |               |                     |                   |                                      |                             |
| A9                                                           | Cross-Origin Resource Sharing (CORS) configuration support                  |                    |                   |               |                     |                   |                                      |                             |
| A10                                                          | Built-in mechanisms for basic threat detection and request validation       |                    |                   |               |                     |                   |                                      |                             |
| <b>Category B: API Lifecycle &amp; Publishing Management</b> |                                                                             |                    |                   |               |                     |                   |                                      |                             |
| #                                                            | Feature                                                                     | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| B1                                                           | Support for full API lifecycle: creation → review → publish → retirement    |                    |                   |               |                     |                   |                                      |                             |

| B2                                                             | API version management with ability to expose multiple versions simultaneously                         |                    |                   |               |                     |                   |                                      |                             |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| B3                                                             | Ability to roll out API updates without service interruption                                           |                    |                   |               |                     |                   |                                      |                             |
| B4                                                             | Customizable approval workflows for API publishing and updates                                         |                    |                   |               |                     |                   |                                      |                             |
| B5                                                             | Policy-driven API retirement and deprecation support                                                   |                    |                   |               |                     |                   |                                      |                             |
| <b>Category C: Developer Portal &amp; Developer Experience</b> |                                                                                                        |                    |                   |               |                     |                   |                                      |                             |
| #                                                              | Feature                                                                                                | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| C1                                                             | A self-service portal for developers to browse, register, and consume APIs                             |                    |                   |               |                     |                   |                                      |                             |
| C2                                                             | Auto-generation and display of API documentation using standards (e.g., OpenAPI/Swagger or equivalent) |                    |                   |               |                     |                   |                                      |                             |
| C3                                                             | Interactive interface for testing APIs without external tools                                          |                    |                   |               |                     |                   |                                      |                             |
| C4                                                             | Automatic generation of client libraries (SDKs) for common programming languages                       |                    |                   |               |                     |                   |                                      |                             |

|                                                             |                                                                             |                    |                   |               |                     |                   |                                      |                             |
|-------------------------------------------------------------|-----------------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| C5                                                          | One-click export of API definitions for testing (e.g., Postman collections) |                    |                   |               |                     |                   |                                      |                             |
| C6                                                          | Code examples and usage guidance for developers                             |                    |                   |               |                     |                   |                                      |                             |
| C7                                                          | Searchable catalog of available APIs with categorization and metadata       |                    |                   |               |                     |                   |                                      |                             |
| C8                                                          | Ability to define public, restricted, and internal API visibility levels    |                    |                   |               |                     |                   |                                      |                             |
| <b>Category D: Data Governance &amp; Policy Enforcement</b> |                                                                             |                    |                   |               |                     |                   |                                      |                             |
| #                                                           | Feature                                                                     | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| D1                                                          | Fine-grained access control on API resources and operations                 |                    |                   |               |                     |                   |                                      |                             |
| D2                                                          | Comprehensive logging and audit trail for all API interactions              |                    |                   |               |                     |                   |                                      |                             |
| D3                                                          | Request and response validation against defined schemas                     |                    |                   |               |                     |                   |                                      |                             |
| D4                                                          | Data masking/anonymization rules for sensitive fields                       |                    |                   |               |                     |                   |                                      |                             |

| D5                                                    | Ability to enforce licensing or usage policies on APIs               |                    |                   |               |                     |                   |                                      |                             |
|-------------------------------------------------------|----------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| D6                                                    | Workflow-driven approval system for data publishing entities         |                    |                   |               |                     |                   |                                      |                             |
| <b>Category E: Integration &amp; Interoperability</b> |                                                                      |                    |                   |               |                     |                   |                                      |                             |
| #                                                     | Feature                                                              | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| E1                                                    | Ability to integrate with external data platforms via open APIs      |                    |                   |               |                     |                   |                                      |                             |
| E2                                                    | Support for integration with data pipelines and message brokers      |                    |                   |               |                     |                   |                                      |                             |
| E3                                                    | Ability to expose AI/ML model inference endpoints through APIs       |                    |                   |               |                     |                   |                                      |                             |
| E4                                                    | Support for multiple API styles: REST, GraphQL, SOAP, streaming APIs |                    |                   |               |                     |                   |                                      |                             |
| E5                                                    | Support for geospatial and map-based API interactions                |                    |                   |               |                     |                   |                                      |                             |
| E6                                                    | Dynamic service discovery for backend microservices                  |                    |                   |               |                     |                   |                                      |                             |

| E7                                               | URL rewriting and routing rule configuration                                                                                                                                                                                                                                                                            |                    |                   |               |                     |                   |                                      |                             |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| E8                                               | Ability to transform headers or payloads during request processing                                                                                                                                                                                                                                                      |                    |                   |               |                     |                   |                                      |                             |
| <b>Category F: Performance &amp; Scalability</b> |                                                                                                                                                                                                                                                                                                                         |                    |                   |               |                     |                   |                                      |                             |
| #                                                | Feature                                                                                                                                                                                                                                                                                                                 | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| F1                                               | The API Gateway capacity SHALL be configurable to handle normal and emergency level load handling.                                                                                                                                                                                                                      |                    |                   |               |                     |                   |                                      |                             |
| F2                                               | The API Gateway SHALL support horizontal scaling across $\geq 10$ active nodes per deployment, with linear or near-linear throughput scaling as nodes are added.                                                                                                                                                        |                    |                   |               |                     |                   |                                      |                             |
| F3                                               | <p>The API Gateway SHALL support deployment across <math>\geq 3</math> geographically separated regions, enabling:</p> <ul style="list-style-type: none"> <li>• Active-active or active-passive configurations</li> <li>• Regional traffic routing</li> <li>• Regional failover without service interruption</li> </ul> |                    |                   |               |                     |                   |                                      |                             |

|    |                                                                                                                                                                                                                                                                                                                                  |  |  |  |  |  |  |  |
|----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| F4 | <p>The API Gateway SHALL provide built-in caching mechanisms with:</p> <ul style="list-style-type: none"><li>• Configurable TTL per API or per endpoint</li><li>• Support for in-memory and distributed cache backends</li><li>• Ability to cache <math>\geq 30\text{--}50\%</math> of eligible read-heavy API traffic</li></ul> |  |  |  |  |  |  |  |
| F5 | <p>The API Gateway SHALL support response compression (e.g., gzip, Brotli or equivalent) capable of:</p> <ul style="list-style-type: none"><li>• Reducing payload size by <math>\geq 60\%</math> for compressible content</li><li>• Automatically applying compression based on client capability</li></ul>                      |  |  |  |  |  |  |  |
| F6 | <p>The API Gateway SHALL support built-in load balancing with at least the following strategies:</p> <ul style="list-style-type: none"><li>• Round-robin</li><li>• Least-connections</li><li>• Weighted routing</li><li>• Health-check-based failover</li></ul>                                                                  |  |  |  |  |  |  |  |
| F7 | <p>The API Gateway SHALL support asynchronous and event-driven communication patterns, including:</p>                                                                                                                                                                                                                            |  |  |  |  |  |  |  |

|                                                              | <ul style="list-style-type: none"> <li>• Webhooks</li> <li>• Callback-based APIs</li> <li>• Message or event-based integration with backend systems</li> <li>• Support for long-running or deferred response workflows</li> </ul> |                    |                   |               |                     |                   |                                      |                             |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| <b>Category G: Monitoring, Analytics &amp; Observability</b> |                                                                                                                                                                                                                                   |                    |                   |               |                     |                   |                                      |                             |
| #                                                            | Feature                                                                                                                                                                                                                           | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| G1                                                           | Real-time dashboards for API traffic and performance monitoring                                                                                                                                                                   |                    |                   |               |                     |                   |                                      |                             |
| G2                                                           | Organization-level analytics for different API providers                                                                                                                                                                          |                    |                   |               |                     |                   |                                      |                             |
| G3                                                           | Consumer-level usage analytics for developers and applications                                                                                                                                                                    |                    |                   |               |                     |                   |                                      |                             |
| G4                                                           | Dataset/API access analytics for policy and governance oversight                                                                                                                                                                  |                    |                   |               |                     |                   |                                      |                             |
| G5                                                           | Alerts/notifications for abnormal or high-risk API activity                                                                                                                                                                       |                    |                   |               |                     |                   |                                      |                             |

| G6                                                      | Compatibility with industry-standard observability frameworks          |                    |                   |               |                     |                   |                                      |                             |
|---------------------------------------------------------|------------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| G7                                                      | Monitoring of API availability, performance, and SLA compliance        |                    |                   |               |                     |                   |                                      |                             |
| <b>Category H: Developer &amp; Community Engagement</b> |                                                                        |                    |                   |               |                     |                   |                                      |                             |
| #                                                       | Feature                                                                | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| H1                                                      | Self-service registration and onboarding for developers                |                    |                   |               |                     |                   |                                      |                             |
| H2                                                      | Automated token renewal and expiration management                      |                    |                   |               |                     |                   |                                      |                             |
| H3                                                      | Mechanism for developers to rate, comment, or provide feedback on APIs |                    |                   |               |                     |                   |                                      |                             |
| H4                                                      | Announcements and update notifications for API changes                 |                    |                   |               |                     |                   |                                      |                             |
| H5                                                      | Dedicated testing/sandbox environment for experimentation              |                    |                   |               |                     |                   |                                      |                             |

| <b>Category I: Monetization &amp; Usage Management</b>   |                                                                       |                    |                   |               |                     |                   |                                      |                             |
|----------------------------------------------------------|-----------------------------------------------------------------------|--------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------|-----------------------------|
| #                                                        | Feature                                                               | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| I1                                                       | Ability to define and assign API usage plans (free, limited, premium) |                    |                   |               |                     |                   |                                      |                             |
| I2                                                       | Usage reporting for cost or billing analytics                         |                    |                   |               |                     |                   |                                      |                             |
| I3                                                       | Configurable alerts when usage thresholds are exceeded                |                    |                   |               |                     |                   |                                      |                             |
| <b>Category J: Security, Compliance &amp; Deployment</b> |                                                                       |                    |                   |               |                     |                   |                                      |                             |
| #                                                        | Feature                                                               | Out of the box (4) | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation | Other Acceptable References |
| J1                                                       | Compliance with national Cybersecurity and data protection policies   |                    |                   |               |                     |                   |                                      |                             |
| J2                                                       | Exportable security and access logs for audits                        |                    |                   |               |                     |                   |                                      |                             |

|    |                                                                                        |  |  |  |  |  |  |  |
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| J3 | Ability to operate in secure network zones (government intranet, hybrid, public cloud) |  |  |  |  |  |  |  |
| J4 | Support for deployment in secure cloud or on-premise environments                      |  |  |  |  |  |  |  |
| J5 | Regular security update and patch management capabilities                              |  |  |  |  |  |  |  |

## ANNEX – C

| COMPONENT: SANDBOX ENVIRONMENT & DEVELOPER WORKSPACE (Scoring Weight: 05%) |                                                                                                                                                                  |                   |               |                     |                   |                                                                                              |                             |  |
|----------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|---------------------|-------------------|----------------------------------------------------------------------------------------------|-----------------------------|--|
| FEATURES                                                                   | <b>SCORING LEVEL EVALUATION SHEET</b><br>(You can select only one scoring level against each feature)<br><i>Note: Check Annex-H to understand scoring levels</i> |                   |               |                     |                   | <b>References in BID</b><br><i>Note: Check Annex-H to understand References requirements</i> |                             |  |
|                                                                            | Out of the box (4)                                                                                                                                               | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation                                                         | Other Acceptable References |  |
| <b>Sandbox Environment &amp; Developer Workspace</b>                       |                                                                                                                                                                  |                   |               |                     |                   |                                                                                              |                             |  |
| #                                                                          | Feature                                                                                                                                                          |                   |               |                     |                   |                                                                                              |                             |  |
| 1                                                                          | Browser-based development workspace (no local installation required)                                                                                             |                   |               |                     |                   |                                                                                              |                             |  |
| 2                                                                          | Pre-configured development environments for common languages (Python, JS, R, Java, etc.)                                                                         |                   |               |                     |                   |                                                                                              |                             |  |
| 3                                                                          | Ability to launch isolated, temporary, or persistent workspaces for each user                                                                                    |                   |               |                     |                   |                                                                                              |                             |  |

|           |                                                                                                 |  |  |  |  |  |  |  |
|-----------|-------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>4</b>  | Built-in terminal/console access for command-line tools                                         |  |  |  |  |  |  |  |
| <b>5</b>  | Support for installing or managing runtime packages and dependencies                            |  |  |  |  |  |  |  |
| <b>6</b>  | Built-in code editor with syntax highlighting and project navigation                            |  |  |  |  |  |  |  |
| <b>7</b>  | Secure API access to National Open Data Portal datasets via pre-configured credentials          |  |  |  |  |  |  |  |
| <b>8</b>  | Preloaded SDKs and client libraries for interacting with ODP datasets and APIs                  |  |  |  |  |  |  |  |
| <b>9</b>  | Workspace templates for common tasks (data analysis, dataset transformation, ML model training) |  |  |  |  |  |  |  |
| <b>10</b> | Ability to clone sample projects or official starter repositories                               |  |  |  |  |  |  |  |
| <b>11</b> | File upload/download support for dataset handling within workspace                              |  |  |  |  |  |  |  |

|           |                                                                                    |  |  |  |  |  |  |  |
|-----------|------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>12</b> | Integration with version control systems (e.g., Git-based or equivalent workflows) |  |  |  |  |  |  |  |
| <b>13</b> | Resource isolation between users (CPU, RAM, storage quotas)                        |  |  |  |  |  |  |  |
| <b>14</b> | Notebook support (e.g., Jupyter-like interactive notebooks)                        |  |  |  |  |  |  |  |
| <b>15</b> | Dataset preview tools within the workspace (tables, charts, maps)                  |  |  |  |  |  |  |  |
| <b>16</b> | Built-in tools for API testing (curl, HTTP clients, scripts)                       |  |  |  |  |  |  |  |
| <b>17</b> | Autosave and persistent session storage (configurable)                             |  |  |  |  |  |  |  |
| <b>18</b> | Secure access through SSO or identity federation                                   |  |  |  |  |  |  |  |
| <b>19</b> | Workspace-level audit logs (actions, API calls, code runs)                         |  |  |  |  |  |  |  |
| <b>20</b> | Ability to publish prototype apps or ML models from workspace back to the platform |  |  |  |  |  |  |  |

|           |                                                                                                |  |  |  |  |  |  |  |
|-----------|------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>21</b> | Role-based workspace permissions (developer / data scientist / analyst)                        |  |  |  |  |  |  |  |
| <b>22</b> | Sandbox network isolation to prevent unauthorized external access                              |  |  |  |  |  |  |  |
| <b>23</b> | Run-time containers or environments that can be rebuilt or reset on demand                     |  |  |  |  |  |  |  |
| <b>24</b> | Terminal-level access to data transformation tools (e.g., CSV utilities, geospatial CLI tools) |  |  |  |  |  |  |  |
| <b>25</b> | Support for scheduled jobs or background tasks (optional)                                      |  |  |  |  |  |  |  |
| <b>26</b> | Temporary API keys for testing workflows without exposing production credentials               |  |  |  |  |  |  |  |
| <b>27</b> | Ability to import datasets directly from URL, API, or ODP catalog                              |  |  |  |  |  |  |  |
| <b>28</b> | Capability to run machine learning workflows (CPU only or                                      |  |  |  |  |  |  |  |

|           |                                                                                          |  |  |  |  |  |  |  |
|-----------|------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
|           | configurable GPU option)                                                                 |  |  |  |  |  |  |  |
| <b>29</b> | Visualization libraries available out of the box (plotting, mapping, dashboards)         |  |  |  |  |  |  |  |
| <b>30</b> | Environment reproducibility via configuration files (environment.yaml, requirements.txt) |  |  |  |  |  |  |  |
| <b>31</b> | Admin ability to define pre-approved extensions/plugins for workspaces                   |  |  |  |  |  |  |  |
| <b>32</b> | Workspace activity monitoring for usage analytics                                        |  |  |  |  |  |  |  |
| <b>33</b> | API rate-limiting & throttling specifically for Sandbox test keys                        |  |  |  |  |  |  |  |
| <b>34</b> | Ability to deploy small proof-of-concept apps from Sandbox to test environments          |  |  |  |  |  |  |  |
| <b>35</b> | Ready-to-use examples demonstrating dataset usage, API calls, and ML pipelines           |  |  |  |  |  |  |  |

|           |                                                                            |  |  |  |  |  |  |  |
|-----------|----------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>36</b> | Collaborative coding features (shared workspace sessions)                  |  |  |  |  |  |  |  |
| <b>37</b> | Notebook sharing and publishing features (e.g., shareable read-only links) |  |  |  |  |  |  |  |
| <b>38</b> | Role-based access to compute resources (higher limits for power users)     |  |  |  |  |  |  |  |
| <b>39</b> | Ephemeral (auto-destroy) workspaces for security-sensitive use cases       |  |  |  |  |  |  |  |
| <b>40</b> | Workspace lifecycle controls (start, stop, restart, delete)                |  |  |  |  |  |  |  |

## ANNEX – D

| COMPONENT: AI/ML REPOSITORY & MODEL LIFECYCLE MANAGEMENT (Scoring Weight: 08%) |                                                                    |                                                                                                                                                           |                   |               |                     |                   |                                                                                       |                             |
|--------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|---------------------|-------------------|---------------------------------------------------------------------------------------|-----------------------------|
| FEATURES                                                                       |                                                                    | SCORING LEVEL EVALUATION SHEET<br>(You can select only one scoring level against each feature)<br><i>Note: Check Annex-H to understand scoring levels</i> |                   |               |                     |                   | References in BID<br><i>Note: Check Annex-H to understand References requirements</i> |                             |
|                                                                                |                                                                    | Out of the box (4)                                                                                                                                        | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation                                                  | Other Acceptable References |
| <b>AI/ML Repository &amp; Model Lifecycle Management</b>                       |                                                                    |                                                                                                                                                           |                   |               |                     |                   |                                                                                       |                             |
| #                                                                              | Feature                                                            |                                                                                                                                                           |                   |               |                     |                   |                                                                                       |                             |
| 1                                                                              | Centralized repository for storing ML models and related artifacts |                                                                                                                                                           |                   |               |                     |                   |                                                                                       |                             |
| 2                                                                              | Model versioning (track multiple versions of each model)           |                                                                                                                                                           |                   |               |                     |                   |                                                                                       |                             |
| 3                                                                              | Experiment tracking (parameters, metrics, logs)                    |                                                                                                                                                           |                   |               |                     |                   |                                                                                       |                             |

|           |                                                                                                       |  |  |  |  |  |  |  |
|-----------|-------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>4</b>  | Model lineage tracking<br>(dataset → code → model<br>→ deployment)                                    |  |  |  |  |  |  |  |
| <b>5</b>  | Metadata storage for models<br>(tags, descriptions, owners)                                           |  |  |  |  |  |  |  |
| <b>6</b>  | Ability to register models<br>under stages (e.g., draft,<br>staging, production)                      |  |  |  |  |  |  |  |
| <b>7</b>  | Approval workflows for<br>model promotion (review<br>→ approve → publish)                             |  |  |  |  |  |  |  |
| <b>8</b>  | Storage of model artifacts<br>across multiple formats<br>(pickle, ONNX,<br>TensorFlow, PyTorch, etc.) |  |  |  |  |  |  |  |
| <b>9</b>  | Automated integrity<br>validation for newly<br>uploaded models                                        |  |  |  |  |  |  |  |
| <b>10</b> | Integration with training<br>environments / notebooks /<br>pipelines                                  |  |  |  |  |  |  |  |
| <b>11</b> | Built-in inference testing<br>tools before deployment                                                 |  |  |  |  |  |  |  |
| <b>12</b> | Model packaging for<br>deployment environments<br>(containerized or portable<br>format)               |  |  |  |  |  |  |  |

|           |                                                                           |  |  |  |  |  |  |  |
|-----------|---------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>13</b> | Deployment hooks for serving engines or API gateways                      |  |  |  |  |  |  |  |
| <b>14</b> | Support for batch and real-time inference deployment                      |  |  |  |  |  |  |  |
| <b>15</b> | Ability to roll back to previous model versions                           |  |  |  |  |  |  |  |
| <b>16</b> | Automated model performance monitoring (accuracy, drift, latency)         |  |  |  |  |  |  |  |
| <b>17</b> | Model drift detection and alerts                                          |  |  |  |  |  |  |  |
| <b>18</b> | Reproducibility support (capture code environment, dependencies, configs) |  |  |  |  |  |  |  |
| <b>19</b> | Compatibility with feature stores (optional but highly beneficial)        |  |  |  |  |  |  |  |
| <b>20</b> | Audit trail of all model activities (upload, update, promotion, usage)    |  |  |  |  |  |  |  |
| <b>21</b> | Access control & role-based permissions for model repository users        |  |  |  |  |  |  |  |
| <b>22</b> | Support for secure storage (encryption at rest & in transit)              |  |  |  |  |  |  |  |

|           |                                                                            |  |  |  |  |  |  |  |
|-----------|----------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>23</b> | Ability to store evaluation reports, test datasets, and validation metrics |  |  |  |  |  |  |  |
| <b>24</b> | Programmatic API for registering, retrieving, updating models              |  |  |  |  |  |  |  |
| <b>25</b> | Web-based UI for browsing and managing models                              |  |  |  |  |  |  |  |
| <b>26</b> | Environment snapshotting (requirements.txt / conda.yaml / container specs) |  |  |  |  |  |  |  |
| <b>27</b> | Automated dependency management for model environments                     |  |  |  |  |  |  |  |
| <b>28</b> | Integration with CI/CD for automated model deployment workflows            |  |  |  |  |  |  |  |
| <b>29</b> | Scalability to store large numbers of models and artifacts                 |  |  |  |  |  |  |  |
| <b>30</b> | Searchable registry (search by model type, owner, tag, metrics)            |  |  |  |  |  |  |  |
| <b>31</b> | Visualization of training metrics and experiment histories                 |  |  |  |  |  |  |  |

|           |                                                                               |  |  |  |  |  |  |  |
|-----------|-------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>32</b> | Comparative analysis of model versions (“model A vs model B”)                 |  |  |  |  |  |  |  |
| <b>33</b> | Support for dataset-to-model linking (traceability)                           |  |  |  |  |  |  |  |
| <b>34</b> | Ability to integrate governance policies (model expiry, review cycles)        |  |  |  |  |  |  |  |
| <b>35</b> | Integration with GPU/CPU compute resources for model validation or retraining |  |  |  |  |  |  |  |
| <b>36</b> | Model sharing across teams with controlled permissions                        |  |  |  |  |  |  |  |
| <b>37</b> | Multi-tenant model isolation (for cross-ministry or cross-agency usage)       |  |  |  |  |  |  |  |
| <b>38</b> | Federated model storage or hybrid storage (cloud/on-prem)                     |  |  |  |  |  |  |  |
| <b>39</b> | Export/import of models to/from external ML platforms                         |  |  |  |  |  |  |  |
| <b>40</b> | Support for event-driven triggers (e.g., retrain when data changes)           |  |  |  |  |  |  |  |

## ANNEX – E

| COMPONENT: ETL DATA INGESTION TRANSFORMATION AND LOADING (Scoring Weight: 10%) |                                                                                               |                                                                                                                                                                      |                   |               |                     |                   |                                                                                                  |                             |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------|---------------------|-------------------|--------------------------------------------------------------------------------------------------|-----------------------------|
| FEATURES                                                                       |                                                                                               | <b>SCORING LEVEL EVALUATION SHEET</b><br>(You can select only one scoring level against each feature)<br><br><i>Note: Check Annex-H to understand scoring levels</i> |                   |               |                     |                   | <b>References in BID</b><br><br><i>Note: Check Annex-H to understand References requirements</i> |                             |
|                                                                                |                                                                                               | Out of the box (4)                                                                                                                                                   | Customisation (3) | 3rd Party (2) | To be Developed (1) | Not Available (0) | OEM's Official Product Documentation                                                             | Other Acceptable References |
| <b>ETL: Data Ingestion, Transformation &amp; Loading</b>                       |                                                                                               |                                                                                                                                                                      |                   |               |                     |                   |                                                                                                  |                             |
| <b>#</b>                                                                       | <b>Feature</b>                                                                                |                                                                                                                                                                      |                   |               |                     |                   |                                                                                                  |                             |
| <b>1</b>                                                                       | Ability to ingest data from multiple source types (databases, APIs, files, streaming sources) |                                                                                                                                                                      |                   |               |                     |                   |                                                                                                  |                             |
| <b>2</b>                                                                       | Support for structured, semi-structured, and unstructured data formats                        |                                                                                                                                                                      |                   |               |                     |                   |                                                                                                  |                             |
| <b>3</b>                                                                       | Support for batch data ingestion (scheduled or manual triggers)                               |                                                                                                                                                                      |                   |               |                     |                   |                                                                                                  |                             |

|           |                                                                                |  |  |  |  |  |  |  |
|-----------|--------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>4</b>  | Support for real-time or near real-time streaming ingestion                    |  |  |  |  |  |  |  |
| <b>5</b>  | Capability to design, build, and customize ingestion pipelines                 |  |  |  |  |  |  |  |
| <b>6</b>  | Ability to ingest data from government systems through secure channels         |  |  |  |  |  |  |  |
| <b>7</b>  | Support for custom connectors for non-standard or legacy systems               |  |  |  |  |  |  |  |
| <b>8</b>  | Data validation rules (schema validation, mandatory fields, type checks)       |  |  |  |  |  |  |  |
| <b>9</b>  | Ability to write custom data validation logic (code-based)                     |  |  |  |  |  |  |  |
| <b>10</b> | Support for transformation operations (cleaning, filtering, mapping)           |  |  |  |  |  |  |  |
| <b>11</b> | Ability to build fully custom transformation logic (code-from-scratch support) |  |  |  |  |  |  |  |
| <b>12</b> | Support for data standardization and normalization                             |  |  |  |  |  |  |  |
| <b>13</b> | Data enrichment capabilities (geo-tagging, metadata creation, lookups)         |  |  |  |  |  |  |  |
| <b>14</b> | Ability to create complex multi-step transformation workflows                  |  |  |  |  |  |  |  |
| <b>15</b> | Version control for transformation pipelines                                   |  |  |  |  |  |  |  |

|    |                                                                                     |  |  |  |  |  |  |  |
|----|-------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| 16 | Ability to perform incremental loads (delta-only updates)                           |  |  |  |  |  |  |  |
| 17 | Support for full data reload and reprocessing workflows                             |  |  |  |  |  |  |  |
| 18 | Automated error handling and retry mechanisms                                       |  |  |  |  |  |  |  |
| 19 | Error routing to separate queues or storage                                         |  |  |  |  |  |  |  |
| 20 | Detailed logging of ETL processing steps and outcomes                               |  |  |  |  |  |  |  |
| 21 | Data lineage tracking (source → processing → output)                                |  |  |  |  |  |  |  |
| 22 | Ability to orchestrate complex workflows with conditional logic                     |  |  |  |  |  |  |  |
| 23 | Ability to schedule jobs with flexible timing (cron-style)                          |  |  |  |  |  |  |  |
| 24 | Trigger-based execution (API call, file arrival, event-based)                       |  |  |  |  |  |  |  |
| 25 | Support for metadata extraction and generation                                      |  |  |  |  |  |  |  |
| 26 | Integration with National Open Data Portal storage backend                          |  |  |  |  |  |  |  |
| 27 | Integration with AI/ML repository for dataset refresh and model retraining triggers |  |  |  |  |  |  |  |

|           |                                                                                                 |  |  |  |  |  |  |  |
|-----------|-------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|
| <b>28</b> | Ability to push processed data to multiple destinations (datastores, APIs, files, ODP, ML repo) |  |  |  |  |  |  |  |
| <b>29</b> | Secure data transfer capabilities (TLS, encrypted channels)                                     |  |  |  |  |  |  |  |
| <b>30</b> | Access control and role-based permissions for pipeline operations                               |  |  |  |  |  |  |  |
| <b>31</b> | Ability to load data into relational, NoSQL, and analytical databases                           |  |  |  |  |  |  |  |
| <b>32</b> | Support for validation of post-load results (row counts, checksums, sampling)                   |  |  |  |  |  |  |  |
| <b>33</b> | Data quality scoring and reporting                                                              |  |  |  |  |  |  |  |
| <b>34</b> | Support for schema evolution and compatibility checks                                           |  |  |  |  |  |  |  |
| <b>35</b> | Auto-scaling or configurable scaling for ETL workloads                                          |  |  |  |  |  |  |  |
| <b>36</b> | Resource monitoring (CPU, memory, throughput)                                                   |  |  |  |  |  |  |  |
| <b>37</b> | Fault tolerance and pipeline recovery mechanisms                                                |  |  |  |  |  |  |  |
| <b>38</b> | Support for multi-tenant pipeline isolation                                                     |  |  |  |  |  |  |  |
| <b>39</b> | Ability to reuse pipeline components or templates                                               |  |  |  |  |  |  |  |
| <b>40</b> | Ability to export/import pipeline definitions (JSON/YAML/XML)                                   |  |  |  |  |  |  |  |



## Annex - F

### 1. National Open Data Ecosystem (NODE) Architecture (20%)

#### 1.1 Architectural Pattern & Modularity (3%)

##### *Evaluation Focus*

Ability of the proposed architecture to support **modularity, extensibility, and independent evolution of services.**

##### *Mandatory Architectural Expectations*

- Layered or service-oriented architecture
- Loose coupling between components
- Independent deployment of modules
- No monolithic or tightly bound design

##### *Evidence Required*

- Logical architecture diagram
- Component interaction diagram
- Description of module boundaries

##### *Scoring*

| Score | Scoring Basis                                                                              |
|-------|--------------------------------------------------------------------------------------------|
| 2.0   | Fully modular, loosely coupled, independently deployable architecture clearly demonstrated |
| 1.0   | Partial modularity; some tight coupling or shared dependencies                             |
| 0.0   | Monolithic or non-modular architecture                                                     |

#### 1.2 Scalability, Performance & Resilience (3%)

##### *Evaluation Focus*

Ability of the architecture to scale horizontally, sustain peak loads, and remain operational under failure conditions.

*Mandatory Architectural Expectations*

- Horizontal scalability (scale-out)
- Support for peak concurrent web users in terms of API requests per second
- Stateless service design where applicable
- High availability ( $\geq 99.9\%$ )
- Defined disaster recovery approach (RPO/RTO - 15-minute RPO and 4-hour RTO);

*Evidence Required*

- Deployment architecture diagram
- Scalability and capacity assumptions
- High availability and DR strategy

*Scoring*

| Score      | Scoring Basis                                                |
|------------|--------------------------------------------------------------|
| <b>2.0</b> | Proven horizontal scalability with HA and DR clearly defined |
| <b>1.0</b> | Scalability addressed but resilience/DR partially defined    |
| <b>0.0</b> | No clear scalability or resilience design                    |

**1.3 Security & Data Architecture (3%)***Evaluation Focus*

Degree to which security and data protection are embedded into the architecture by design (*Check 1.12 Cybersecurity Section*)

*Mandatory Architectural Expectations*

- Secure authentication and authorization (SSO, RBAC)
- Encryption at rest and in transit
- Data segregation and tenancy controls
- Full audit logging
- Compliance with Government of Pakistan data residency requirements
- Automated Data Ingestion Pipelines" and "Schema Validation"

*Evidence Required*

- Security architecture diagram
- End-to-End Data flow diagram
- Description of access control and audit mechanisms

*Scoring*

| Score | Scoring Basis                                            |
|-------|----------------------------------------------------------|
| 2.0   | Comprehensive, end-to-end security and data architecture |
| 1.0   | Security controls present but partially documented       |
| 0.0   | Generic or undocumented security design                  |

**1.4 Interoperability & API Architecture (3%)***Evaluation Focus*

Ability of the architecture to integrate seamlessly with existing and future government systems.

*Mandatory Architectural Expectations*

- API-first design
- Use of open and standardized interfaces
- Centralized API management (security, throttling, versioning)
- Support for integration with identity, payments, messaging, and legacy systems

*Evidence Required*

- API and integration architecture diagram
- Sample API structure or catalog
- Description of integration governance

*Scoring*

| Score      | Scoring Basis                                                    |
|------------|------------------------------------------------------------------|
| <b>2.0</b> | Well-defined API-first, standards-based integration architecture |
| <b>1.0</b> | APIs present but governance or extensibility limited             |
| <b>0.0</b> | Point-to-point or tightly bound integrations                     |

**1.5 Deployability, Maintainability & Government Control (3%)***Evaluation Focus*

Long-term operational sustainability and Government ownership of the **NODE**.

*Mandatory Architectural Expectations*

- Deployable on infrastructure as per Cloud First Policy
- The solution shall ensure data portability, open API interfaces, and transition support so the Purchaser is not technically or contractually restricted from migrating to an alternative solution
- Support for CI/CD or controlled release mechanisms
- Full custom-developed source code and configuration handover
- Maintainability by Government or third-party vendors

*Evidence Required*

- Deployment and DevOps architecture
- Handover and ownership statement
- Description of release and maintenance model

*Scoring*

| Score      | Scoring Basis                                                                                                    |
|------------|------------------------------------------------------------------------------------------------------------------|
| <b>2.0</b> | Transferable, Government-controlled architecture with documented data portability and open API interoperability. |
| <b>1.0</b> | Partial Government control with some platform dependency                                                         |

|            |                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------|
| <b>0.0</b> | <b>No documented strategy for data portability, transition support, or open API interoperability.</b> |
|------------|-------------------------------------------------------------------------------------------------------|

## 1.6 Data & Metadata Standards (2%)

### *Evaluation Focus*

Degree to which the proposed architecture supports standardized, interoperable, and machine-readable data and metadata management aligned with national and international open data standards.

### *Mandatory Architectural Expectations*

- Support for standardized dataset and catalog metadata frameworks (e.g., DCAT, Dublin Core Initiative (DCMI), or equivalent)
- Support for statistical and microdata documentation standards (e.g., DDI Codebook or equivalent)
- Support for geospatial metadata standards (e.g., ISO 19115 or equivalent)
- Machine-readable metadata formats (e.g., JSON-LD, RDF, XML, or equivalent)
- Support for standardized licensing metadata (e.g., SPDX or equivalent)
- Metadata schema validation and enforcement during dataset publication
- Alignment with the National Data Governance Policy & Data Standards issued by the Government of Pakistan

### *Evidence Required*

- Metadata architecture or data catalog design
- Description of supported metadata standards and schema structure
- Data ingestion and metadata validation workflow
- Example metadata schema or catalog structure

### *Scoring*

| <b>Score</b> | <b>Scoring Basis</b>                                                                                                   |
|--------------|------------------------------------------------------------------------------------------------------------------------|
| <b>2.0</b>   | Comprehensive standards-based data and metadata architecture clearly aligned with national and international standards |
| <b>1.0</b>   | Partial metadata standard support or limited enforcement mechanisms                                                    |
| <b>0.0</b>   | No metadata interoperability framework proposed and no evidence of alignment with recognized standards.                |

## 1.7 Data Ingestion & Curation Capability (3%)

### *Evaluation Focus*

End-to-end capability to ingest, validate, transform, and publish government data from heterogeneous sources at national scale.

### *Mandatory Architectural Expectations*

- Support for all four data integration modes: push, scheduled pull, real-time API federation, and event-driven sync
- Automated data validation, cleansing, and quality scoring prior to publication
- Support for structured, semi-structured, geospatial, and unstructured formats
- Configurable pipeline orchestration with error handling, retry logic, and alerting
- Metadata auto-extraction and standard-compliant enrichment at ingestion

### *Evidence Required*

- Architecture diagram of the data ingestion, transformation pipeline and data curation workflow
- List of natively supported source connectors with format coverage declared supported by official documentation
- Sample pipeline configuration Model demonstrating validation, transformation, and error handling logic
- Documented evidence of a comparable government data ingestion deployment

### *Scoring*

| Score      | Scoring Basis                                                                                                                                                          |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>3.0</b> | Supports all four data integration modes AND $\geq 15$ native source connectors AND automated metadata enrichment AND configurable validation rules with error routing |
| <b>2.0</b> | Supports at least 3 NDEL integration modes AND 8 to 10 native connectors AND automated metadata extraction AND validation with basic error handling                    |
| <b>1.0</b> | Supports push and scheduled pull AND $\geq 5$ native connectors AND partial metadata automation AND basic validation                                                   |
| <b>0.0</b> | No documented ingestion architecture OR single-format support only                                                                                                     |

## Annex - G

### 1. Infrastructure Sizing and Performance (10%)

#### 1.1 Resource Sizing Declaration

Each Proposer shall provide a **comprehensive infrastructure resource sizing declaration** for operating the complete solution:

The sizing shall cover all core platform components, including but not limited to:

- National Open Data Portal
- Data Extraction, Transformation and Integration Layer (ETL/ELT)
- API Gateway
- Developer Sandbox Environment
- AI/ML Analytical Model Repository
- Supporting infrastructure services (databases, messaging, monitoring, security, logging, orchestration)

The sizing must reflect the **steady-state operational requirements** necessary to meet the functional and performance parameters defined under **2.4 Resource Requirements section**.

The bidder requiring the **lowest total infrastructure resources to meet the same requirements** will receive the highest score.

#### 1.2 Evaluation Method

- Resource efficiency will be evaluated based on the total infrastructure resources required to meet the Purchaser's workload and performance parameters. Each resource category will be scored independently and then combined using the weighting defined below.
- Scoring Formula (Extremely Simple & Defensible)

- For each resource category:
- $\text{Score} = 100 \times (\text{Lowest Declared Value Among All Bidders} / \text{Bidder's Declared Value})$
- **The Purchaser reserves the right to verify the feasibility of the declared resource sizing against the bidder's proposed architecture and performance assumptions.**
- **Unrealistic or technically infeasible resource declarations may result in score adjustment, rejection, or a request for Proof-of-Concept (PoC) validation by the Purchaser.**
- **The bidder with the lowest declared resource requirement in each resource category shall receive a score of 100.**
- Other bidders get proportionally lower scores
- Scores are capped at 100
- The following five resource categories shall be scored independently using the weighting below:

| Resource           | Weight |
|--------------------|--------|
| vCPU               | 30%    |
| RAM                | 30%    |
| Structured Storage | 20%    |
| Object Storage     | 20%    |

- Total Resource Efficiency Score
- $\text{Total Score} = \sum (\text{Resource Score} \times \text{Weight})$
- This score is then normalized to the assigned technical weight of this evaluation criterion (20%).

### 1.3 Resource Parameters to be Declared

For the steady-state operation of the platform meeting the required workload parameters (including concurrent users, dataset volumes, API traffic, developer workspaces, and analytical processing requirements), **the vendor shall declare the following infrastructure resources in the line of 2.4 Resource Requirements:**

| Resource Category       | Production | DR Environment | Test/Staging | Total |
|-------------------------|------------|----------------|--------------|-------|
| vCPU (cores)            |            |                |              |       |
| RAM (GB)                |            |                |              |       |
| Structured Storage (GB) |            |                |              |       |
| Object Storage (GB)     |            |                |              |       |

## 1.4 Resource Requirements

### 1.4.1 Workload & Sizing Parameters (3-Year Horizon)

To enable a comparable and logical resource sizing declaration, all Bidders **SHALL** use the following baseline requirements as the minimum workload for their infrastructure design.

Bidders SHALL declare infrastructure resources sized for **Year 3 (Target) workload** parameters, representing the full 3-year design horizon. Year 1 and Year 2 parameters are provided for context and phased deployment planning.

**The infrastructure must be sized taking into account the projected yearly growth described in the table below while maintaining all defined performance SLAs.**

| Component / Metric                              | Year 1 (Baseline)                                                                                                                                    | Year 2                                                                                                                                               | Year 3 (Target)                                                                                                                                      |
|-------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Total Catalog Datasets</b>                   | 500 – 800                                                                                                                                            | 1500 – 2000                                                                                                                                          | 3000 – 4000                                                                                                                                          |
| <b>Total Daily API Transactions</b>             | 20,000 – 50,000                                                                                                                                      | 100,000 – 300,000                                                                                                                                    | 500,000 – 1,000,000                                                                                                                                  |
| <b>Concurrent Web Users (Normal Operations)</b> | 100 – 200 for <b>Normal Operations</b><br>(System SHALL support burst capacity up to 3× the normal concurrent load during peak or emergency demand.) | 250 – 400 for <b>Normal Operations</b><br>(System SHALL support burst capacity up to 3× the normal concurrent load during peak or emergency demand.) | 500 – 750 for <b>Normal Operations</b><br>(System SHALL support burst capacity up to 3× the normal concurrent load during peak or emergency demand.) |

|                                      |                                                     |                                                     |                                                      |
|--------------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------------------|
| <b>API Gateway Throughput</b>        | 20 – 30 req/sec                                     | 60 – 100 req/sec                                    | 150 – 250 req/sec                                    |
| <b>Daily ETL/ELT Pipelines</b>       | 20 – 30 pipelines (10 – 15 data sources / Agencies) | 40 – 60 pipelines (20 - 30 data sources / Agencies) | 80 – 120 pipelines (40 - 60 data sources / Agencies) |
| <b>Sandbox Concurrent Workspaces</b> | 50 - 100                                            | 150 - 300                                           | 400 - 500                                            |

### 1.4.2 Storage Sizing Benchmarks

Bidders shall calculate storage requirements (Object Storage and Database) based on the following average dataset size distribution:

- **Structured Data (80% of catalog):** Avg. 25 MB per dataset (CSV, JSON, Parquet).
- **Spatial / Geospatial Data (15% of catalog):** Avg. 250 MB per dataset (GeoJSON, SHP, TIFF).
- **Unstructured/Legacy Data (5% of catalog):** Avg. 15 MB per dataset (PDF, Documentation).
- **AI/ML Artifacts:** Avg. 500 MB per versioned model. Bidders shall assume a minimum of 200 versioned AI/ML model artifacts for Year 3 storage sizing purposes.
- **Developer Sandbox:** 5–10 GB persistent block storage per active workspace, with access to shared object storage pools for larger dataset operations.
- **The Test/Staging** environment SHALL be sized at a minimum of 50% of the Production environment resource allocation.

### 1.4.3 Availability, Reliability, and Disaster Recovery

- **System Availability:** The production environment SHALL achieve a minimum availability of **99.9%** measured monthly, excluding approved maintenance windows.
- **Redundancy:** All critical components (API Gateway, Portal, Identity Services) SHALL operate in redundant **active-active or active-passive** configurations across at least two independent availability zones.
- **Failover:** Automated failover mechanisms SHALL ensure service disruption is limited to **< 5 minutes**.
- **Disaster Recovery (DR): Recovery Time Objective (RTO):**  $\leq 4$  hours.
- **Recovery Point Objective (RPO):**  $\leq 15$  minutes.
- **Backups:** Daily incremental and weekly full system backups with secure off-site storage.

### 1.4.4 Response Time & Throughput Standards

Under normal operating conditions, the system SHALL maintain the following average response times:

- **Standard Web Interaction:** < 2 seconds (Search, Metadata retrieval, Catalog browsing, Dataset Preview).
- **API Metadata Queries:** ≤ 500 milliseconds.
- **API Dataset Queries:** ≤ 1 second.
- **Download Initiation:** Begin within 3 seconds for files up to 500 MB.
- **Visualization Rendering:** Initial results for charts/maps rendered within 3 seconds.

### 1.4.5 Security Performance & Vulnerability Remediation

The system SHALL support continuous vulnerability scanning and automated security monitoring across infrastructure, APIs, and all application layers. Remediation of identified vulnerabilities SHALL follow these strict timelines:

- **Critical (CVSS ≥ 9.0):** Within 72 hours.
- **High (CVSS 7.0–8.9):** Within 7 business days.
- **Medium (CVSS 4.0–6.9):** Within 30 days.
- **Security Alerts:** Anomalous activity detection and alerting within 1 minute of occurrence.
- Security controls such as **Multi-Factor Authentication (MFA)** and **Single Sign-On (SSO)** SHALL not introduce authentication latency exceeding **1 second under normal operating conditions**.
- **Logs:** Security logs SHALL be retained for a **minimum of 12 months or as per Data Governance Policy** to support audit, compliance, and forensic investigation requirements.

## 1.5 Resource Scaling Evaluation

As per the Resource Sizing Declaration, Bidders shall itemize resources (vCPU, RAM, Structured Storage, and Object Storage) across Production, DR, and Test/Staging environments.

**Evaluation Method:** Bidders requiring the lowest total infrastructure resources to meet these defined parameters, while demonstrating a valid architectural approach, will receive the maximum efficiency score (20%).

## ANNEX – H

| <p style="text-align: center;"><b>UNDERSTANDING REFERENCES TO SUBMIT</b><br/> <i>(Applicable for Annex-A, Annex-B, Annex-C, Annex-D, Annex-E)</i></p> |                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S#                                                                                                                                                    | Evidence Type                                                                                                                                                                               | Description                                                                                                                                                                                                                                                                                                                                    | Purpose / What It Proves                                                                                                                                                                       | Acceptance Criteria                                                                                                                                                                                                                                                                                            |
| 1                                                                                                                                                     | <b>OEM’s Official Product Documentation</b> <ul style="list-style-type: none"> <li>• Must explicitly show or describe the feature</li> <li>• Must be current and version-aligned</li> </ul> | Official documentation issued by the OEM/ Technology Provider, such as: product manuals, feature pages, admin/publisher/developer guides, API documentation, architecture diagrams.                                                                                                                                                            | Confirms that the feature exists natively or officially as part of the solution ecosystem.                                                                                                     | Document must be traceable to OEM                                                                                                                                                                                                                                                                              |
| 2                                                                                                                                                     | <b>Other Acceptable Reference</b>                                                                                                                                                           | Verifiable third-party or independent references that demonstrate the availability or implementation of the stated feature, such as: publicly accessible technical white papers, peer-reviewed case studies, independent analyst reports, standards-body references, or formally published implementation guides from recognized institutions. | Provides supplementary assurance that the feature is technically feasible, industry-recognized, and practically implementable in real-world deployments, without replacing OEM accountability. | Reference must be publicly verifiable or officially published, clearly map to the stated feature, and be applicable to the proposed solution context. Such references are acceptable only as <b>supporting evidence</b> and do not substitute for OEM documentation where OEM evidence is explicitly required. |

| <b>UNDERSTANDING SCORING LEVELS (Degree of Exceeding Minimum Requirements)</b><br><i>(Applicable for Annex-A, Annex-B, Annex-C, Annex-D, Annex-E)</i> |                                                                    |                                                                                                                                     |                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S#                                                                                                                                                    | Scoring Level                                                      | Definition                                                                                                                          | Conditions / Interpretation                                                                                                                                                                                                                |
| 1                                                                                                                                                     | <b>Out of Box</b> <i>(Out of the box or via official plugin)</i>   | The feature exists natively in the proposed solution <b>without any custom development</b> .                                        | Exists by default in the product OR - Achieved by enabling configurations OR - Achieved by installing an official plugin/module available in the solution's ecosystem OR - Requires <b>no code development</b> and <b>no customization</b> |
| 2                                                                                                                                                     | <b>Customisation</b> <i>(Requires partial development)</i>         | The feature does <b>not</b> exist out of the box but <b>can be achieved by extending the platform</b> through customization.        | Requires custom plugin/module development- Requires moderate customization (UI/API/workflow)- Requires configuration + enhancement- Does <b>not</b> require building the entire feature from scratch                                       |
| 3                                                                                                                                                     | <b>3rd Party</b> <i>(Through pre-built third-party extensions)</i> | The feature does <b>not</b> exist out of the box but <b>can be achieved by implementing 3rd party extension</b> .                   | Requires to implement any existing extensions to make the feature available.                                                                                                                                                               |
| 4                                                                                                                                                     | <b>To Be Developed</b> <i>(Feature Must Be Built from Scratch)</i> | The feature <b>does not exist</b> in the platform and <b>no extension or plugin exists</b> . It must be fully developed end-to-end. | Not available in core platform- No plugin/module exists in ecosystem- Requires complete design + development from zero- High implementation effort and higher risk                                                                         |
| 5                                                                                                                                                     | <b>Not Available</b>                                               | The feature is <b>not offered</b> and <b>will not be part</b> of the proposed solution.                                             | The platform <b>cannot</b> support the feature even with customization. Architectural limitation - Licensing constraint - Technology constraints                                                                                           |

**Note:** This scoring scale applies only to features that have successfully passed the mandatory pass/fail evaluation stage (Section III, clause 2.1). Any proposal that fails to meet a mandatory requirement shall be rejected at that stage and will not proceed to this scored evaluation.

## ANNEX - I

### KEY PERSONNEL — EVALUATION CRITERIA (15%)

Total Evaluation Weight: 15% of Technical Proposal Score

#### 1. Purpose & Scope

This section defines the evaluation criteria and scoring methodology for assessing Key Personnel proposed by the Vendor. Each of the 23 roles is scored across up to three criteria: Educational Qualification, Relevant Experience, and — where well-known professional certifications exist for that discipline — Professional Certifications. For roles where no widely recognised professional certification exists, the certification criterion is marked N/A and carries no score; the weighting is redistributed to Experience. CVs, academic certificates, and project references are mandatory supporting documents used to verify and substantiate scoring — they do not constitute a separate scored criterion. The combined score for all 23 roles constitutes 15% of the total Technical Proposal evaluation score.

#### 2. Scoring Criteria & Weightings per Role

Each role's maximum score is distributed across scored criteria as follows. Where a role has no well-known professional certification, the cert column is N/A and its 10% is absorbed into Experience:

| Sub-Criterion              | Educational Qualification                     | Relevant Experience                               | Professional Certifications                                                                                                                                                                                                                                                 | Total Weight |
|----------------------------|-----------------------------------------------|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| Where certification exists | 30%                                           | 60%                                               | 10% (Full or Zero)                                                                                                                                                                                                                                                          | 100%         |
| Where certification is N/A | 30%                                           | 70%                                               | N/A — Not Scored                                                                                                                                                                                                                                                            | 100%         |
| Scoring Basis              | Meets minimum degree requirement for the role | Years of experience & scale/relevance of projects | Valid & relevant certifications submitted — full 10% awarded if provided, zero if absent. Applies only to roles where well-known professional certifications exist. Roles without such certifications are marked N/A and scored on Education (30%) + Experience (70%) only. | —            |

|                   |                                                                                                                                                                                          |   |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Evidence Required | CV + academic/professional certificates + project references. These are mandatory supporting documents used to verify and score the above criteria — they do not carry a separate score. | — |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|

### 3. Evaluation Criteria & Score Allocation by Role

The table below details the minimum requirements and maximum achievable score for each Key Personnel role. The 'Evidence Required' column lists documents that must be submitted to support evaluation of the three scored criteria.

| #                                                                | Key Personnel Role                       | Evidence Required (Mandatory Supporting Documents)                                  | Educational Qualification [30% of Role Score]                                                    | Relevant Experience [60% of Role Score]                                                                                                                                                                                                | Professional Certifications [10% — Full or Zero]   | Max Score    |
|------------------------------------------------------------------|------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------|
| <b>A. Core Technical &amp; Management Personnel (Roles 1–18)</b> |                                          |                                                                                     |                                                                                                  |                                                                                                                                                                                                                                        |                                                    |              |
| 1                                                                | <b>Project Manager</b>                   | CV, academic & professional certificates, ≥2 project references                     | Bachelor's in Business Administration, Computer Science, IT, or related [0.36%]                  | 10+ years in IT project management, including ≥2 large-scale data platforms or digital government projects; public sector experience preferred [0.72%]                                                                                 | PMP, PRINCE2, or equivalent [0.12% — Full or Zero] | <b>1.20%</b> |
| 2                                                                | <b>Solution Architect</b>                | CV, academic & professional certificates, architecture diagrams, project references | Bachelor's in Computer Science or Software Engineering or related [0.33%]                        | 8+ years in system architecture; ≥2 projects as lead architect for integrated systems (portal, API gateway, ETL pipelines) [0.66%]                                                                                                     | TOGAF or equivalent [0.11% — Full or Zero]         | <b>1.10%</b> |
| 3                                                                | <b>Lead Software Engineer (Frontend)</b> | CV, academic & professional certificates, ≥2 project references                     | Bachelor's in Computer Science, Software Engineering, Information Technology, or related [0.24%] | 8+ years in frontend development including ≥2 large-scale web platforms, open data portals, or digital government platforms; experience with modern web architectures, frontend frameworks, and API-driven interfaces required [0.56%] | N/A [Not scored]                                   | <b>0.80%</b> |
| 4                                                                | <b>Lead Software Engineer (Backend)</b>  | CV, academic & professional certificates, ≥2 project references                     | Bachelor's in Computer Science, Software Engineering, Information                                | 8+ years in backend system development including ≥2 large-scale distributed systems, data platforms, or digital government solutions; experience with microservices                                                                    | N/A [Not scored]                                   | <b>0.80%</b> |

| #  | Key Personnel Role                                 | Evidence Required (Mandatory Supporting Documents)              | Educational Qualification [30% of Role Score]                                                         | Relevant Experience [60% of Role Score]                                                                                                                                                                           | Professional Certifications [10% — Full or Zero]                                                           | Max Score    |
|----|----------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|--------------|
|    |                                                    |                                                                 | Technology, or related [0.24%]                                                                        | architecture, APIs, and database systems required [0.56%]                                                                                                                                                         |                                                                                                            |              |
| 5  | <b>Integration &amp; Implementation Specialist</b> | CV, academic & professional certificates, ≥2 project references | Bachelor's in Computer Science, Information Systems, Software Engineering, or related [0.21%]         | 7+ years in enterprise system integration including ≥2 large-scale system integration or government digital platform projects involving APIs, data exchange frameworks, or middleware platforms [0.49%]           | N/A [Not scored]                                                                                           | <b>0.70%</b> |
| 6  | <b>AI/ML Expert</b>                                | CV, academic & professional certificates, ≥2 project references | Bachelor's or Master's in Data Science, Artificial Intelligence, Computer Science, or related [0.24%] | 7+ years in data science, AI/ML systems, or analytical platforms including ≥2 projects involving machine learning model lifecycle management, data analytics platforms, or AI-driven government solutions [0.48%] | AWS ML Specialty, Google Professional ML Engineer, or equivalent [0.08% — Full or Zero]                    | <b>0.80%</b> |
| 7  | <b>IT Infrastructure Specialist</b>                | CV, academic & professional certificates, ≥2 project references | Bachelor's in Computer Science, Information Technology, Network Engineering, or related [0.21%]       | 8+ years in IT infrastructure design and operations including ≥2 projects involving large-scale digital platforms, cloud infrastructure, or government IT systems [0.42%]                                         | AWS Solutions Architect, Azure Administrator, Google Cloud Architect, or equivalent [0.07% — Full or Zero] | <b>0.70%</b> |
| 8  | <b>Business Analyst / Service Process Expert</b>   | CV, academic & professional certificates, ≥2 project references | Bachelor's in Business Administration, Information Systems, Computer Science, or related [0.18%]      | 7+ years in business analysis or service process design including ≥2 projects involving digital government services, data platforms, or enterprise information systems [0.36%]                                    | CBAP, PMI-PBA, or equivalent [0.06% — Full or Zero]                                                        | <b>0.60%</b> |
| 9  | <b>Product Owner</b>                               | CV, academic & professional certificates, ≥2 project references | Bachelor's in Computer Science, Business Administration, Information Systems, or related [0.18%]      | 7+ years in product management or digital product development including ≥2 projects involving large-scale digital platforms or public sector technology solutions [0.36%]                                         | PSPO (Professional Scrum Product Owner) or SAFe POPM, or equivalent [0.06% — Full or Zero]                 | <b>0.60%</b> |
| 10 | <b>CX Expert (Customer Experience)</b>             | CV, academic & professional certificates, ≥2 project references | Bachelor's in Human-Computer Interaction, Design, Computer Science, Information                       | 7+ years in user experience design or digital service design including ≥2 projects involving web platforms, digital                                                                                               | N/A [Not scored]                                                                                           | <b>0.50%</b> |

| #  | Key Personnel Role                                      | Evidence Required (Mandatory Supporting Documents)                                              | Educational Qualification [30% of Role Score]                                                               | Relevant Experience [60% of Role Score]                                                                                                                                        | Professional Certifications [10% — Full or Zero]                                                     | Max Score    |
|----|---------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------|
|    |                                                         |                                                                                                 | Systems, or related [0.15%]                                                                                 | government services, or data portals [0.35%]                                                                                                                                   |                                                                                                      |              |
| 11 | <b>Scrum Master</b>                                     | CV, academic & professional certificates, ≥2 project references                                 | Bachelor's in Computer Science, Information Technology, Business Administration, or related [0.15%]         | 7+ years in software development project environments including ≥2 projects using Agile methodologies for digital platforms or enterprise systems [0.3%]                       | CSM (Certified Scrum Master), PSM (Professional Scrum Master), or equivalent [0.05% — Full or Zero]  | <b>0.50%</b> |
| 12 | <b>Training &amp; Knowledge Transfer Lead</b>           | CV, academic & professional certificates, ≥2 project references                                 | Bachelor's in Education, Information Systems, Computer Science, Business Administration, or related [0.15%] | 7+ years in training delivery, knowledge transfer programs, or technology capacity building including ≥2 projects involving digital platforms or government IT systems [0.35%] | N/A [Not scored]                                                                                     | <b>0.50%</b> |
| 13 | <b>Information Security Specialist</b>                  | CV, academic & professional certificates, project references, description of frameworks applied | Bachelor's in Computer Science, Cybersecurity, or related [0.24%]                                           | 7+ years in information security, including audits of platforms, API/IAM, and data governance [0.48%]                                                                          | CISSP, CISM, CEH, or equivalent [0.08% — Full or Zero]                                               | <b>0.80%</b> |
| 14 | <b>Data Engineer (ETL &amp; Integration Specialist)</b> | CV, academic & professional certificates, pipeline descriptions, project references             | Bachelor's in Computer Science or Data Science or related [0.18%]                                           | 5+ years in data engineering; ≥2 projects involving complex pipelines across multiple sources with diverse datasets using modern ETL tools [0.42%]                             | N/A [Not scored]                                                                                     | <b>0.60%</b> |
| 15 | <b>Database Designer &amp; Administrator</b>            | CV, academic & professional certificates, ≥2 project references                                 | Bachelor's in Computer Science or related [0.18%]                                                           | 7+ years in DB design and administration; large dataset management; SQL tuning; ETL/ELT support [0.36%]                                                                        | Oracle OCP, Microsoft SQL Server, PostgreSQL, or equivalent DB certifications [0.06% — Full or Zero] | <b>0.60%</b> |
| 16 | <b>UI/UX Designer</b>                                   | CV, academic & professional certificates, portfolio link                                        | Bachelor's in Design, HCI, or equivalent; portfolio required [0.15%]                                        | 5+ years in UI/UX design; experience with data-rich platforms and accessibility standards [0.35%]                                                                              | N/A [Not scored]                                                                                     | <b>0.50%</b> |

| #                                          | Key Personnel Role                                      | Evidence Required (Mandatory Supporting Documents)                           | Educational Qualification [30% of Role Score]                                                                  | Relevant Experience [60% of Role Score]                                                                                                                                                        | Professional Certifications [10% — Full or Zero]                                                              | Max Score    |
|--------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|--------------|
| 17                                         | <b>Cloud/DevOps Engineer</b>                            | CV, academic & professional certificates, project references, CI/CD diagrams | Bachelor's in Computer Science or related [0.18%]                                                              | 5+ years in IT, including ≥3 years in private or public cloud/DevOps deployments [0.36%]                                                                                                       | AWS, Azure, or Google Cloud Associate/Professional level certifications, or equivalent [0.06% — Full or Zero] | <b>0.60%</b> |
| 18                                         | <b>Developer Sandbox Specialist / Platform Engineer</b> | CV, academic & professional certificates, ≥2 project references              | Bachelor's in Computer Science or related [0.15%]                                                              | 5+ years in software or platform engineering; ≥1 project involving browser-based IDEs or Kubernetes-based developer environments [0.3%]                                                        | CKA (Certified Kubernetes Administrator) or equivalent [0.05% — Full or Zero]                                 | <b>0.50%</b> |
| <b>B. Data Curation Team (Roles 19–23)</b> |                                                         |                                                                              |                                                                                                                |                                                                                                                                                                                                |                                                                                                               |              |
| 19                                         | <b>Data Curation Lead</b>                               | CV, academic & professional certificates, ≥2 project references              | Bachelor's or higher in Information Management, Data Science, Computer Science, Statistics, or related [0.15%] | 7+ years in data governance, metadata management, or information systems; demonstrated experience with open data or digital platforms; experience in metadata standards implementation [0.35%] | N/A [Not scored]                                                                                              | <b>0.50%</b> |
| 20                                         | <b>Metadata Specialist</b>                              | CV, academic & professional certificates, ≥2 project references              | Bachelor's in Information Science, Library Science, Data Management, or related [0.12%]                        | 5+ years in metadata management or catalog systems; familiarity with internationally recognized metadata standards [0.28%]                                                                     | N/A [Not scored]                                                                                              | <b>0.40%</b> |
| 21                                         | <b>Data Quality Analyst</b>                             | CV, academic & professional certificates, ≥2 project references              | Bachelor's in Data Science, Statistics, Computer Science, or related [0.12%]                                   | 5+ years in data validation, data profiling, or quality assurance [0.28%]                                                                                                                      | N/A [Not scored]                                                                                              | <b>0.40%</b> |
| 22                                         | <b>Data Steward / Agency Liaison</b>                    | CV, coordination experience references                                       | Bachelor in related field. [0.12%]                                                                             | 5+ years working with government or institutional data; strong coordination and documentation skills [0.28%]                                                                                   | N/A [Not scored]                                                                                              | <b>0.40%</b> |
| 23                                         | <b>Data Scientist</b>                                   | CV, academic & professional                                                  | Bachelor's or Master's in Data Science, Computer                                                               | 5+ years in data science, statistical analysis, or analytical modeling [0.35%]                                                                                                                 | N/A [Not scored]                                                                                              | <b>0.50%</b> |

| #                                             | Key Personnel Role | Evidence Required (Mandatory Supporting Documents) | Educational Qualification [30% of Role Score] | Relevant Experience [60% of Role Score] | Professional Certifications [10% — Full or Zero] | Max Score     |
|-----------------------------------------------|--------------------|----------------------------------------------------|-----------------------------------------------|-----------------------------------------|--------------------------------------------------|---------------|
|                                               |                    | certificates, ≥2 project references                | Science, Statistics, or related [0.15%]       |                                         |                                                  |               |
| <b>TOTAL EVALUATION SCORE — KEY PERSONNEL</b> |                    |                                                    |                                               |                                         |                                                  | <b>15.00%</b> |

#### 4. General Evaluation Conditions

- All Key Personnel must be proposed at the time of bid submission. Substitutions after contract award require prior written approval from the Contracting Authority.
- CVs must be signed by the proposed individual confirming availability and commitment to the project for its full duration.
- Professional certifications must be current and valid at the time of proposal submission. Expired certifications will not be scored.
- Failure to provide mandatory documents may prevent verification of experience or education and result in the lowest score for those criteria.
- Professional certifications are only scored for roles where well-known, widely recognised certifications exist in that discipline. For all other roles the certification column is marked N/A and carries no score. Where scored, the rule is binary: full 10% is awarded if a valid certification is submitted, zero if none is provided. No partial marks are awarded for certifications under any circumstance.

**Ministry of Information Technology & Telecommunication**

Digital Economy Enhancement Project (DEEP)

# SERVICE LEVEL AGREEMENT (SLA)

## National Open Data Ecosystem (NODE)

### Post Go-Live Operations & Managed Services

|                     |                                                                                                                |
|---------------------|----------------------------------------------------------------------------------------------------------------|
| SLA Reference:      | NODE-SLA-2026-001                                                                                              |
| Effective Date:     | [To be completed upon OAC issuance]                                                                            |
| SLA Period:         | Year 1 (cost locked in main contract; execution at MoITT's discretion) + Year 2 & Year 3 (optional extensions) |
| SLA Commencement:   | Upon issuance of Operational Acceptance Certificate (OAC), if MoITT elects to execute the SLA                  |
| Purchaser:          | Ministry of Information Technology & Telecommunication (MoITT) / DEEP                                          |
| Supplier:           | [Vendor Name – to be inserted upon contract award]                                                             |
| Contract Reference: | PK-MOITT-546238-GO-RFP                                                                                         |

## 1. Definitions and Interpretation

In this Service Level Agreement, the following definitions apply unless the context otherwise requires:

| Term                  | Definition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OAC                   | Operational Acceptance Certificate – the formal certificate issued by the Purchaser upon successful completion of Operational Acceptance Testing (OAT), marking MoITT’s eligibility to activate the SLA, if MoITT elects to do so.                                                                                                                                                                                                                                                                                                                                      |
| SLA Period            | The contractual period during which the Supplier is obligated to provide managed services. The Year 1 SLA cost is locked in the main contract and the Supplier is bound by the quoted price; however, actual execution and activation of Year 1 services is at MoITT’s sole discretion — MoITT is under no obligation to award or activate the SLA. Where MoITT elects to execute the SLA, it may do so via a separate contract on the same locked terms and pricing. Years 2 and 3 are optional extensions exercisable by the Purchaser on the same terms and pricing. |
| NODE                  | National Open Data Ecosystem – comprising the Open Data Portal, ETL Layer, API Gateway, Developer Sandbox, and AI/ML Analytical Model Library.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Incident              | Any unplanned interruption to, or reduction in quality of, a NODE service component.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Service Window        | The hours during which each support tier is operational, as defined in Section 5.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Downtime              | Any period during which a NODE component is unavailable or operating below the minimum performance thresholds defined in this SLA.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Scheduled Maintenance | Pre-approved maintenance windows notified at least 72 hours in advance, excluded from uptime calculations.                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| DEEP / PIU            | Digital Economy Enhancement Project – Project Implementation Unit within MoITT, acting as the Purchaser’s technical representative.                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MTTR                  | Mean Time to Resolution – the average elapsed time between incident logging and confirmed resolution.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| P1 / P2 / P3 / P4     | Priority levels for incident classification as defined in Section 6.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## 2. Scope of Managed Services

### 2.1 Platform Components Covered

**Important Note on SLA Activation:** The Supplier is required to quote SLA costs as part of the main contract proposal, and those costs are binding for Year 1. However, MoITT is not obligated to execute or activate this SLA. MoITT retains full discretion to award the SLA — for Year 1 or any extension year — via a separate annual contract. Where MoITT elects to activate the SLA, the terms, conditions, and locked unit rates of this agreement shall apply in full.

This SLA governs the post Go-Live managed services for all components of the National Open Data Ecosystem, specifically:

| Component                    | Description                                                                                         | Coverage |
|------------------------------|-----------------------------------------------------------------------------------------------------|----------|
| Open Data Portal             | Web-based central data discovery, publishing, and access management platform                        | Full     |
| ETL / Data Processing Layer  | Data ingestion, transformation, validation, and pipeline orchestration services                     | Full     |
| API Gateway                  | Centralized API management, authentication, throttling, analytics, and versioning                   | Full     |
| Developer Sandbox            | Secure cloud-based IDE and experimentation environment for developers and researchers               | Full     |
| AI/ML Repository             | Analytical model library, versioning, metadata management, and lifecycle management                 | Full     |
| Infrastructure & Hosting     | Cloud infrastructure, compute, storage, networking, DR environment (Pakistan Cloud First compliant) | Full     |
| Security Monitoring          | Continuous vulnerability scanning, intrusion detection, audit logging, alerting                     | Full     |
| Identity & Access Management | IAM, MFA, SSO, role-based access control across all components                                      | Full     |

## 2.2 Services Included

Where MoITT elects to execute this SLA, the Supplier shall provide the following categories of managed services throughout the active SLA Period:

### a) Corrective Maintenance

- Detection, diagnosis, and resolution of all incidents and defects across all NODE components
- Patch management and security vulnerability remediation within defined timelines
- Root cause analysis (RCA) for all Critical and High severity incidents
- Regression testing following any fix or patch deployment

### b) Preventive & Adaptive Maintenance

- Proactive health monitoring, performance tuning, and capacity optimization
- Software license renewals and version updates for all components
- Configuration management and change control implementation
- Quarterly security assessments and penetration testing (applicable if SLA is activated in Year 1; Years 2–3 if extended)

### c) Platform Operations

- 24/7 infrastructure monitoring across Production, DR, and all hosted environments
- Backup execution, validation, and restoration testing (at minimum monthly)
- Disaster Recovery (DR) testing (minimum twice per year)
- Scheduled maintenance execution with advance notification
- CI/CD pipeline operations and code deployment management

**d) Data Operations Support**

- Monitoring and resolution of ETL pipeline failures and data ingestion errors
- Support for ongoing onboarding of new data providers (Deliverable 6 activities)
- Metadata validation and data quality issue resolution
- API availability and performance monitoring

**e) User & Stakeholder Support**

- Technical helpdesk for government administrators, data publishers, and portal operators
- Issue logging, tracking, escalation, and closure via formal ticketing system
- Operational guidance to participating agencies on platform usage

**f) Reporting & Governance**

- Weekly operational status reports to DEEP/PIU
- Monthly SLA performance reports with metrics, trends, and corrective actions
- Quarterly executive summary reports
- Incident post-mortems for all P1 and P2 incidents

**2.3 Services Excluded**

The following are explicitly outside the scope of this SLA unless separately agreed in writing:

- New feature development or major enhancements beyond the agreed scope
- Policy, regulatory, or institutional coordination with data-providing agencies (Purchaser's responsibility)
- Physical security of end-user devices
- Network connectivity from agency premises to the platform (agency responsibility)
- Third-party system failures outside the Supplier's operational control

### 3. Availability Commitments

#### 3.1 System Availability Targets

The Supplier guarantees the following minimum availability levels, measured on a monthly basis (excluding approved Scheduled Maintenance windows):

| Component                        | Availability Target              | Measurement Period | Planned Downtime Allowance |
|----------------------------------|----------------------------------|--------------------|----------------------------|
| Open Data Portal (public-facing) | 99.5% per month                  | Calendar month     | ≤ 3.6 hours/month          |
| API Gateway                      | 99.5% per month                  | Calendar month     | ≤ 3.6 hours/month          |
| ETL Processing Layer             | 99.0% per month                  | Calendar month     | ≤ 7.3 hours/month          |
| Developer Sandbox                | 99.0% per month                  | Calendar month     | ≤ 7.3 hours/month          |
| AI/ML Repository                 | 99.0% per month                  | Calendar month     | ≤ 7.3 hours/month          |
| Authentication / IAM Services    | 99.9% per month                  | Calendar month     | ≤ 0.7 hours/month          |
| Disaster Recovery Environment    | Recoverable within 4 hours (RTO) | Per incident       | RPO ≤ 1 hour               |

#### 3.2 Availability Calculation

Availability (%) =  $[(\text{Total Minutes in Month} - \text{Unplanned Downtime Minutes}) / \text{Total Minutes in Month}] \times 100$

Excluded from Downtime calculation:

- Pre-approved Scheduled Maintenance (minimum 72-hour advance notice required)
- Force Majeure events as defined in the General Conditions of Contract
- Downtime caused directly by Purchaser's actions or third-party systems outside Supplier's control
- Agreed testing windows formally authorized by DEEP/PIU

#### 3.3 Scheduled Maintenance

- Maintenance windows shall be proposed by the Supplier and require written approval by DEEP/PIU
- Standard maintenance window: Saturday 02:00–06:00 PKT (4 hours maximum)
- Emergency maintenance (security-critical): 4-hour advance notice minimum, DEEP/PIU notification mandatory
- Maximum scheduled maintenance per month: 8 hours
- All maintenance activities shall be communicated via the official ticketing system and email to DEEP/PIU

## 4. Performance Benchmarks

### 4.1 Response Time Standards

| Transaction / Function                   | Target Response Time | Percentile | Concurrent Load      |
|------------------------------------------|----------------------|------------|----------------------|
| Portal homepage load                     | < 2 seconds          | 95th       | 500 concurrent users |
| Dataset search & results display         | < 3 seconds          | 95th       | 500 concurrent users |
| Dataset metadata page load               | < 2 seconds          | 95th       | 500 concurrent users |
| Dataset file download initiation         | < 5 seconds          | 95th       | 200 concurrent users |
| API Gateway response (authenticated)     | < 500ms              | 95th       | 1000 req/min         |
| API Gateway response (public)            | < 300ms              | 95th       | 2000 req/min         |
| ETL pipeline completion (standard batch) | < 30 minutes per run | Average    | Scheduled            |
| Sandbox workspace provisioning           | < 60 seconds         | 90th       | 50 concurrent users  |
| Admin dashboard load                     | < 3 seconds          | 95th       | 100 concurrent users |

### 4.2 Capacity & Scalability

- Platform shall support at least 500–750 concurrent web users under Year 3 Normal Operations load
- Infrastructure shall be sized to accommodate minimum 30% annual growth in data volume, API calls, and concurrent users
- ETL integration layer shall support 50% annual increase in data source connections
- The Supplier shall conduct Load Testing and Stress Testing semi-annually during the SLA period and submit reports to DEEP/PIU

### 4.3 Data Freshness & Pipeline Performance

| Metric                                        | Target                                                               | Measurement  |
|-----------------------------------------------|----------------------------------------------------------------------|--------------|
| ETL pipeline success rate                     | ≥ 99% of scheduled runs complete without critical errors (P1)        | Monthly      |
| Metadata completeness                         | ≥ 95% of published datasets have mandatory metadata fields populated | Monthly      |
| Dataset freshness (scheduled updates)         | ≥ 95% of datasets updated within declared update frequency           | Monthly      |
| Data ingestion latency (near-real-time feeds) | ≤ 15 minutes from source event to publication                        | Per pipeline |
| API uptime                                    | ≥ 99.5%                                                              | Monthly      |
| API error rate                                | < 0.5% of total API calls result in 5xx errors                       | Monthly      |

## 5. Support Model & Service Windows

### 5.1 Support Tiers

| Support Tier            | Coverage                                         | Channels                  | Applicable To                      |
|-------------------------|--------------------------------------------------|---------------------------|------------------------------------|
| Tier 1 – 24/7 Critical  | 24 hours/day, 7 days/week, 365 days/year         | Hotline, Email, Ticketing | P1 Critical incidents only         |
| Tier 2 – Extended Hours | 07:00–22:00 PKT, 7 days/week                     | Email, Ticketing, Phone   | P2 High severity incidents         |
| Tier 3 – Business Hours | 09:00–18:00 PKT, Mon–Fri (excl. public holidays) | Email, Ticketing, Portal  | P3 Medium, P4 Low, general support |

### 5.2 Contact & Escalation Matrix

| Level | Role                            | Contact Method            | Escalation Trigger                |
|-------|---------------------------------|---------------------------|-----------------------------------|
| L1    | Service Desk / NOC              | Ticketing system / Email  | Initial incident logging          |
| L2    | Senior Technical Support        | Phone / Email             | P1/P2 not resolved within 2 hours |
| L3    | Lead Engineer / Architect       | Phone / Direct escalation | P1 not resolved within 4 hours    |
| L4    | Supplier Project Director       | Phone / Email to DEEP PM  | P1 not resolved within 8 hours    |
| L5    | Purchaser Escalation (DEEP PIU) | Formal notice             | Persistent SLA breach             |

## 6. Incident Classification & Resolution Framework

### 6.1 Severity Definitions & Resolution Timelines

| Priority | Severity | Definition / Examples                                                                                                                                                                                                           | Acknowledgement       | Resolution Target      |
|----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|------------------------|
| P1       | Critical | Complete system unavailability; all NODE components inaccessible; authentication failure platform-wide; active security breach or critical data exposure; production database corruption                                        | Within 1 hour         | Within 12 hours        |
| P2       | High     | Major functional disruption; Open Data Portal unavailable; API Gateway down for >50% of consumers; ETL pipeline complete failure; core module failure with no workaround; serious security vulnerability with exploitation risk | Within 2 hours        | Within 24 hours        |
| P3       | Medium   | Partial functional limitations; specific features degraded; subset of ETL pipelines failing; Sandbox partially unavailable; performance degradation exceeding thresholds for <50% of users; workaround exists                   | Within 4 hours        | Within 3 business days |
| P4       | Low      | Minor defects; cosmetic issues; non-critical reporting errors; documentation gaps; minor UI issues not affecting core functionality; individual user access problems                                                            | Within 1 business day | Within 7 business days |

### 6.2 Incident Management Process

#### Logging & Acknowledgement

- All incidents shall be logged in the formal issue-tracking system within the acknowledgement window
- Each incident shall be assigned a unique ticket number, severity classification, timestamp, and assigned owner
- The Purchaser (DEEP/PIU) may report incidents via ticketing portal, email, or telephone hotline

#### Diagnosis & Resolution

- The Supplier shall immediately mobilize appropriate technical resources upon incident logging
- Progress updates shall be provided to DEEP/PIU at intervals not exceeding: P1 – every 2 hours; P2 – every 4 hours; P3 – daily; P4 – per weekly report
- All P1 and P2 incidents require a Root Cause Analysis (RCA) report submitted within 5 business days of resolution
- All corrective fixes shall undergo regression testing before deployment to production

**Closure & Post-Incident Review**

- Incidents are deemed closed upon Purchaser confirmation of resolution
- The Supplier shall maintain an incident register and include incident summaries in monthly SLA reports
- Recurring incidents (same root cause,  $\geq 3$  occurrences within 30 days) shall be escalated to a formal Problem Management review

## 7. Organizational Onboarding & Data Operations During SLA Period

This section defines the Supplier's obligations for the full operationalization and continued ecosystem adoption support during the SLA Period. The SLA Period commences upon final project acceptance, including closure of all Deliverable 6 sub-deliverables (D6-A through D6-E). Accordingly, the SLA Period does not overlap with Deliverable 6 — it begins after final project sign-off.

However, during the SLA Period, the Supplier is required to continue performing the same category of techno-functional ecosystem support activities that were carried out under Deliverable 6 — including onboarding of new organizations, data ingestion and pipeline management, metadata governance, API enablement, Sandbox support, and AI/ML data readiness — as an ongoing operational obligation. These obligations are integral to the managed services scope of this SLA and are distinct from (and in addition to) the incident management and platform maintenance obligations described elsewhere in this document.

### 7.1 Continued Organizational Onboarding & Techno-Functional Enablement

During the SLA Period, the Supplier shall continue to provide full techno-functional support for the onboarding and operational enablement of data-providing organizations within the National Open Data Ecosystem. This includes all organizations not yet onboarded at the close of Deliverable 6, as well as any new organizations nominated by MoITT/DEEP during the SLA Period.

For each organization, the Supplier shall perform all necessary technical, integration, and operational enablement activities, including but not limited to:

- Assessment of source systems, data assets, formats, update frequencies, and technical readiness of the participating organization
- Design and implementation of data ingestion mechanisms — manual, semi-automated, or fully automated pipelines — as appropriate to the organization's technical maturity
- Development and configuration of ETL/ELT pipelines, data mappings, and transformation rules aligned with approved metadata standards and data governance frameworks
- Configuration of dataset publication workflows, version management, metadata registration, and lifecycle controls
- Enablement of secure API-based or data-exchange integrations where required by the organization's systems
- Facilitation of dataset availability and usability across the Open Data Portal, API Gateway, Sandbox Environment, and analytics/AI-ML layers
- Provision of targeted technical guidance, configuration sessions, and operational support to participating organizations during onboarding and initial operational use
- Diagnosis and resolution of all onboarding-related technical issues, including connectivity failures, schema mismatches, metadata validation errors, access-control misconfigurations, and data-exchange constraints
- Data governance and compliance guidance to support participating organizations in adopting approved data governance practices, including data classification, anonymization, quality assurance, and regulatory compliance
- Proactive engagement with onboarding pipelines — identifying risks or bottlenecks, notifying DEEP/PIU proactively, and recommending technical or process improvements to enhance adoption efficiency

The Supplier shall ensure that all onboarding outcomes demonstrate operationally usable datasets and functional data pipelines — not merely administrative registration. Evidence of successful onboarding shall include operational ingestion pipelines, validated metadata records, published datasets accessible through the portal or APIs, and demonstrable integration across ecosystem layers.

## 7.2 Ongoing Data Operations & Ecosystem Health

Throughout the SLA Period, in addition to platform incident management, the Supplier shall maintain the following ongoing data operations:

- Active monitoring of all ingestion pipelines for all onboarded organizations, ensuring data freshness, completeness, and pipeline reliability
- ETL pipeline failure detection and resolution within defined timelines — complete pipeline failures treated as P2 (within 24 hours); partial failures as P3 (within 3 business days)
- Metadata validation and quality assurance for all published datasets, including enforcement of mandatory metadata fields, controlled vocabulary compliance, and schema conformance
- Support for new data source integrations requested by DEEP/PIU for any organization up to the total target of 30 organizations
- Automated and manual data quality checks — structural integrity, anomaly detection, type mismatches, range validation — prior to and following ingestion
- Maintenance of dataset versioning, update frequency compliance, and provenance tracking across all published datasets
- Enablement and upkeep of Sandbox datasets — ensuring curated, anonymized, or synthetic datasets are current and accessible for developers and researchers
- Support for AI/ML data readiness — including preparation and structuring of datasets suitable for analytics and machine learning workloads — as requested by DEEP/PIU
- Continuous monitoring and optimization of API performance, authentication flows, and gateway configurations for all data consumer integrations

## 7.3 Knowledge Transfer & Capacity Enablement

The Supplier's knowledge transfer and capacity building obligations continue throughout the SLA Period. Specifically:

- All configurations, scripts, pipelines, integration artifacts, and operational procedures developed or updated during the SLA Period shall be fully documented and handed over to DEEP/MoITT on an ongoing basis
- The Supplier shall conduct targeted, need-based technical walkthroughs, configuration sessions, and capacity enablement activities for data-providing organizations and DEEP/PIU technical staff, as directed by DEEP/PIU
- All operational documentation, runbooks, and data governance guidance materials shall be maintained in current, version-controlled form and accessible to DEEP/PIU at all times
- The Supplier shall support the DEEP/PIU team in building internal capability to independently manage, extend, and operate the platform following the SLA Period

## 7.4 Weekly Operational Reporting

The Supplier shall submit a Weekly Operations Report to DEEP/PIU throughout the SLA Period. Each report shall cover:

- Open incidents: status, severity, age, and assigned owner
- Resolved incidents: summary, resolution applied, and RCA status (if applicable)
- ETL pipeline performance: success rates, failures, and remediation actions taken
- Dataset publication metrics: new datasets published, updates applied, metadata quality scores
- Onboarding progress: organizations onboarded during the reporting period, pipeline status, and acceptance evidence
- Data operations summary: freshness compliance, quality check results, anomalies identified and resolved

- Risks, issues, and recommended corrective or preventive actions

## 7.5 Non-Performance

Persistent failure to meet the onboarding, data operations, or reporting obligations defined in this section shall be treated as non-performance under this SLA and shall attract applicable contractual remedies in accordance with the General and Special Conditions of Contract. Each onboarding milestone and operational obligation is subject to formal acceptance by DEEP/PIU.

## 8. Reporting Obligations

| Report                         | Frequency               | Contents                                                                                                                            | Submission Deadline                                              |
|--------------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| Weekly Operations Report       | Weekly                  | Open/resolved incidents, ETL pipeline health, dataset metrics, onboarding progress, risks                                           | The next business day following the reporting week, by 12:00 PKT |
| Monthly SLA Performance Report | Monthly                 | Availability metrics per component, response time compliance, incident statistics, MTTR trends, SLA breach log, remediation actions | Within 5 business days after month-end                           |
| Quarterly Executive Summary    | Quarterly               | High-level platform health, adoption metrics, capacity outlook, upcoming risks, optimization recommendations                        | Within 10 business days after quarter-end                        |
| Incident Root Cause Analysis   | Per P1/P2 incident      | Timeline, root cause, impact assessment, corrective actions, preventive measures                                                    | Within 5 business days of incident closure                       |
| Security Assessment Report     | Annually (minimum)      | Vulnerability scan results, penetration test findings, remediation status, compliance posture                                       | Within 30 days of assessment completion                          |
| DR Test Report                 | Semi-annually (minimum) | DR test objectives, execution summary, RTO/RPO achieved, gaps identified, remediation plan                                          | Within 10 business days of test completion                       |
| Load & Stress Test Report      | Semi-annually           | Test scenarios, load profiles, results vs. SLA benchmarks, bottlenecks, resolutions                                                 | Within 10 business days of test completion                       |

## 9. Service Credits & Penalties

### 9.1 Availability-Based Service Credits

Where the Supplier fails to meet the availability commitments in Section 3, the following service credits shall apply per component per month:

| Availability Achieved (Monthly)                  | Service Credit (% of monthly SLA fee for affected component) |
|--------------------------------------------------|--------------------------------------------------------------|
| 99.5% and above (Open Data Portal / API Gateway) | No credit – target met                                       |
| 99.0% – 99.49% (Open Data Portal / API Gateway)  | 5% service credit                                            |
| 98.0% – 98.99% (Open Data Portal / API Gateway)  | 10% service credit                                           |
| 95.0% – 97.99% (Open Data Portal / API Gateway)  | 20% service credit                                           |
| Below 95.0% (Open Data Portal / API Gateway)     | 30% service credit + formal notice of breach                 |
| 99.0% and above (ETL / Sandbox / AI/ML)          | No credit – target met                                       |
| 98.0% – 98.99% (ETL / Sandbox / AI/ML)           | 5% service credit                                            |
| 95.0% – 97.99% (ETL / Sandbox / AI/ML)           | 15% service credit                                           |
| Below 95.0% (ETL / Sandbox / AI/ML)              | 25% service credit + formal notice of breach                 |

### 9.2 Resolution Time Penalties

| Breach                                                           | Penalty                                              |
|------------------------------------------------------------------|------------------------------------------------------|
| P1 incident not resolved within 12 hours                         | 2% of monthly SLA fee per incident                   |
| P1 incident not resolved within 24 hours                         | 5% of monthly SLA fee per incident (cumulative)      |
| P2 incident not resolved within 24 hours                         | 1% of monthly SLA fee per incident                   |
| P2 incident not resolved within 48 hours                         | 3% of monthly SLA fee per incident (cumulative)      |
| Failure to submit weekly report on time (>2 instances per month) | 0.5% of monthly SLA fee                              |
| Failure to submit monthly SLA performance report within deadline | 1% of monthly SLA fee                                |
| Onboarding milestone (D6-A to D6-E) missed by >30 days           | As per liquidated damages provisions in the Contract |

### 9.3 Service Credit Cap & Cumulation

- Total service credits in any single month shall not exceed 30% of the monthly SLA fee
- Service credits are cumulative within a month but subject to the 30% cap
- Credits are applied against the next invoice; where the contract has ended, credits shall be refunded within 30 days

- Service credits are the Purchaser's primary remedy for SLA breaches and do not preclude other contractual remedies for persistent non-performance
- Notwithstanding the monthly cap, total service credits in any rolling 12-month period shall not exceed 100% of the total SLA fees paid or payable in that period

## 10. Security Obligations

### 10.1 Continuous Security Operations

- The Supplier shall maintain 24/7 security monitoring, intrusion detection, and alerting across all NODE components
- All security vulnerabilities shall be assessed using CVSS scoring and remediated within the following timelines:

| CVSS Score / Severity      | Remediation Deadline                                |
|----------------------------|-----------------------------------------------------|
| Critical (CVSS $\geq$ 9.0) | Within 24 hours of identification                   |
| High (CVSS 7.0 – 8.9)      | Within 72 hours of identification                   |
| Medium (CVSS 4.0 – 6.9)    | Within 14 calendar days                             |
| Low (CVSS < 4.0)           | Within 30 calendar days or next planned maintenance |

- All security incidents shall be classified as P1 and managed under the Critical incident resolution framework
- DEEP/PIU shall be notified immediately (within 1 hour) of any confirmed security breach or data exposure event
- Annual penetration testing by a qualified third party; results submitted to DEEP/PIU within 30 days

### 10.2 Data Protection

- All government data hosted within NODE shall remain in compliance with the Pakistan Cloud First Policy
- Data residency, encryption at rest (AES-256 minimum), and encryption in transit (TLS 1.2+) shall be maintained throughout the SLA Period
- The Supplier shall not access, share, or use any NODE data for any purpose other than service delivery under this SLA
- Role-based access control (RBAC) and MFA shall be enforced for all Supplier personnel accessing production systems

## 11. Business Continuity & Disaster Recovery

| Parameter                      | Commitment                                                           |
|--------------------------------|----------------------------------------------------------------------|
| Recovery Time Objective (RTO)  | ≤ 4 hours for complete platform recovery                             |
| Recovery Point Objective (RPO) | ≤ 1 hour (maximum data loss in event of disaster)                    |
| Backup Frequency               | Daily incremental; weekly full backup                                |
| Backup Retention               | Minimum 90 days                                                      |
| Backup Validation              | Monthly restoration test with results documented                     |
| DR Test Frequency              | Minimum twice per year; full failover simulation                     |
| DR Environment Availability    | Maintained in a geographically separate availability zone            |
| Production Redundancy          | Active-Active or Active-Passive across at least 2 availability zones |

## 12. Change Management

- All changes to production systems (configuration, code, infrastructure) shall follow a formal Change Management process approved by DEEP/PIU
- Standard changes (pre-approved, low-risk): 48-hour advance notification to DEEP/PIU
- Major changes (infrastructure, architecture, security configurations): minimum 2-week advance notice and formal approval required
- Emergency changes (required to resolve P1 incident): immediate implementation permitted with DEEP/PIU notification within 1 hour and formal documentation within 24 hours
- No material design or scope changes shall be implemented without written approval of the Purchaser in accordance with the General Conditions of Contract

## 13. Knowledge Transfer & Transition

### 13.1 Ongoing Knowledge Transfer (During SLA Period)

- The Supplier shall maintain up-to-date operational runbooks, configuration documentation, and architecture diagrams throughout the SLA Period
- All custom configurations, ETL pipeline scripts, integration artifacts, and deployment scripts shall be version-controlled and accessible to DEEP/PIU
- The Supplier shall provide need-based technical walkthroughs and training sessions for DEEP/PIU technical staff (minimum 2 sessions per quarter)

### 13.2 End-of-SLA Transition

- At least 90 days before SLA expiry (or earlier if directed by Purchaser), the Supplier shall initiate a formal transition plan
- Upon contract expiry, termination, or completion, the Supplier shall:
  - Provide full handover of custome-developed source code, configurations, credentials, and documentation
  - Support transition to another supplier or in-house team for up to six (6) months
  - Ensure business continuity without service disruption during transition

- Transfer all data, backups, and operational artifacts to Purchaser-designated systems
- The transition period shall not constitute an extension of the Supplier's SLA obligations unless separately agreed in writing

## 14. SLA Governance & Review

### 14.1 Joint Operational Review

- A Joint Operational Review meeting shall be held monthly between DEEP/PIU and the Supplier's service management team
- Agenda shall include: SLA performance review, open incident review, risk register review, upcoming planned activities, and any contractual matters
- The Supplier's designated Service Manager shall attend all Joint Operational Review meetings

### 14.2 SLA Review & Amendment

- This SLA shall be reviewed quarterly and may be amended by mutual written agreement of both parties
- Changes to SLA targets, service scope, or penalties require formal contract variation
- The Purchaser reserves the right to request an independent audit of SLA performance metrics at any time

## 15. Signatures & Execution

This Service Level Agreement is entered into by the authorized representatives of both parties and forms an integral part of the Contract for the National Open Data Ecosystem (NODE).

| For the Purchaser                                                                                           | For the Supplier                                 |
|-------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Ministry of Information Technology & Telecommunication (MoITT) / Digital Economy Enhancement Project (DEEP) | [Supplier Legal Name]                            |
| <b>Authorized Signatory:</b>                                                                                | <b>Authorized Signatory:</b>                     |
| <hr/> Name: _____<br>Title: _____<br>Date: _____                                                            | <hr/> Name: _____<br>Title: _____<br>Date: _____ |
| Official Stamp / Seal:                                                                                      | Official Stamp / Seal:                           |
|                                                                                                             |                                                  |

## Annex A – Performance Metrics Dashboard (Template)

The Supplier shall maintain and submit the following Monthly SLA Performance Dashboard as part of the Monthly SLA Performance Report:

| Metric                              | Target              | Actual (Month) | Status | Notes |
|-------------------------------------|---------------------|----------------|--------|-------|
| Portal Availability                 | 99.5%               | ____%          | ●      |       |
| API Gateway Availability            | 99.5%               | ____%          | ●      |       |
| ETL Success Rate                    | ≥ 99%               | ____%          | ●      |       |
| P1 Incidents (count)                | 0 unresolved >12h   | ____           | ●      |       |
| P2 Incidents (count)                | 0 unresolved >24h   | ____           | ●      |       |
| MTTR P1                             | < 12 hours avg      | ____ hrs       | ●      |       |
| MTTR P2                             | < 24 hours avg      | ____ hrs       | ●      |       |
| Datasets Published                  | Cumulative growth   | ____           | ●      |       |
| Orgs Onboarded (D6)                 | Per phase milestone | ____           | ●      |       |
| Security Vulnerabilities Remediated | 100% within SLA     | ____/____      | ●      |       |
| Service Credits Triggered           | None (target)       | ____           | ●      |       |

● = Green (Met) | ● = Amber (At Risk) | ● = Red (Breached)