

# **Request for Bids**

**Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA)**

# **Revised Bidding Document for Procurement of**

**Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA)**

## **Procurement of:**

**Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA)**

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**Purchaser:** *Department of Agriculture, Government of Maharashtra*

**Project:** *Project on Climate Resilient Agriculture*

**Contract title:** *Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA)*

**Country:** **India**

**Loan No. /Credit No. / Grant No.:** **88290-IN**

**RFB No:** **IN-MAHAPOCRA-102980**

**Issued on:** **01<sup>st</sup> March 2019**

# **Revised Bidding Document**

## **Summary**

### **Specific Procurement Notice**

#### **Specific Procurement Notice - Request for Bids (RFB).**

The template attached is the Specific Procurement Notice for Request for Bids, two-envelope Bidding process with e-Procurement and without Prequalification.

### **Bidding Document:**

**Request for Bids - Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA)**

## **PART 1 – BIDDING PROCEDURES**

### **Section I - Instructions to Bidders (ITB)**

This Section provides relevant information to help Bidders prepare their Bids. It is based on a two-envelope (2) Bidding process with e-Procurement. Information is also provided on the submission, opening, and evaluation of Bids and on the award of Contracts.

### **Section II - Bid Data Sheet (BDS)**

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

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

This Section specifies which of the following methodology will be used to determine the Most Advantageous Bid.

**rated criteria are used:** The Bidder that meets the qualification criteria and whose Bid:

(i) is substantially responsive, and

(ii) is the best evaluated Bid (i.e. the Bid with the highest combined technical/quality/price score); or

### **Section IV - Bidding Forms**

This Section contains the forms which are to be completed by the Bidder and submitted as part of the Bid

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

This Section contains information regarding eligible countries.

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

This section includes the Fraud and Corruption provisions which apply to this Bidding 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.

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

This Section consists of Part A, Contract Data which contains data, and Part B, Specific Provisions which contains clauses specific to each contract. 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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## Specific Procurement Notice – Request for Bids

### Request for Bid Information Systems (Design, Supply and Installation) E-Procurement Notice (Two-Envelope Bidding Process with e-Procurement and without Prequalification)

**Purchaser:** *Department of Agriculture, Government of Maharashtra*

**Project:** *Project on Climate Resilient Agriculture*

**Contract title:** *Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA)*

**Country:** **India**

**Loan No. /Credit No. / Grant No.:** **88290-IN**

**RFB No:** **IN-MAHAPOCRA-102980**

**Issued on:** **01<sup>st</sup> March 2019**

1. The Government of India has received financing from the World Bank toward the cost of the Project on Climate Resilient Agriculture, and intends to apply part of the proceeds toward payments under the contract1 for Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA). “For this contract, the Borrower shall process the payments using the Direct Payment disbursement method, as defined in the World Bank’s Disbursement Guidelines for Investment Project Financing, except for those payments, which the contract provides to be made through letter of credit.”
  2. Project on Climate Resilient Agriculture, The Department of Agriculture, Government of Maharashtra now invites online Bids from eligible Bidders for Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA). Interested bidders may obtain further information and inspect the bidding documents at the address given below during office hours Project Director, PoCRA, PMU ,30 , Arcade , World Trade Center , Cuff Pared Mumbai, email ID: pd@mahapocra.gov.in
  3. Bidding will be conducted through international competitive procurement using Request for Bids (RFB) as specified in the World Bank’s “Procurement Regulations for IPF Borrowers, July 2016 revised August 2018” and is open to all eligible Bidders as defined in the Procurement Regulations. In addition, please refer to paragraphs 3.14 and 3.15 setting forth the World Bank’s policy on conflict of interest.
  4. Bidding documents in English are available online [www.mahatenders.gov.in](http://www.mahatenders.gov.in) from 01/03/2019 to 10/06/2019 for a non-refundable fee of *Indian Rs.20,000/- or in a convertible currency*. The method of payment will be on line payment on [www.mahatenders.gov.in](http://www.mahatenders.gov.in) Payment documents are
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to be submitted subsequently as per the procedure described in paragraph 8 below. Bidders will be required to register in the website, which is free of cost. The bidder would be responsible for ensuring that any addenda available on the website is also downloaded and incorporated.

5. For submission of the bids, the bidder is required to have Digital Signature Certificate (DSC) from one of the authorized Certifying Authorities, authorized by Government of India for issuing DSC. Bidders can see the list of licensed CA's from the link ([www.cca.gov.in](http://www.cca.gov.in)). Aspiring bidders who have not obtained the user ID and password for participating in e-procurement in this Project, may obtain the same from the website: [www.mahatenders.gov.in](http://www.mahatenders.gov.in) A non-refundable fee of Rs. 20,000/- (inclusive of tax) is required to be paid. The method of payment will be on line. (Payment documents are to be submitted subsequently as per the procedure described in paragraph 8 below).
6. Bids must be submitted online [www.mahatenders.gov.in](http://www.mahatenders.gov.in) on or before IST 15:00 HRS on 10/06/2019. Any bid or modifications to bid (including discount) received outside e-procurement system will not be considered. The electronic bidding system would not allow any late submission of bids. 'Technical Part' of the Bids will be publicly opened online on the 10/06/2019 in the presence of the bidders' designated representatives and anyone who chooses to attend at the address below *PMU, PoCRA, 30-B, Arcade, World Trade Centre, Cuff Pared, Mumbai* at IST 15:30 HRS, and this could also be viewed by the bidders online. The "Financial Part" shall remain unopened in the e-procurement system until the second public Bid opening for the financial part. In the event of the date specified for bid opening being declared as a closed holiday for the purchaser's office, the due date for opening of bids will be the following working day at the same time and venue.
7. All Bids must be accompanied by a "Bid Security" of Indian Rs 50,00,000 /- *or an equivalent amount in a freely convertible currency in case of a Bid Security*. (The original bid security documents in approved form shall be submitted as per the procedure described in paragraph 8 below).
8. The bidders are required to submit (a) original payment documents towards the cost of bid document and registration on e-procurement website (if not previously registered); (b) original bid security; and (c) original affidavit regarding correctness of information/documents furnished with the bid so as to reach *PMU, PoCRA, 30-B, Arcade, World Trade Centre, Cuff Pared, Mumbai* before the bid submission deadline given above (i.e. IST 15.00 hours of 10/06/2019), either by registered post/speed post/courier or by hand, failing which such bids will be declared non-responsive and will not be opened.
9. Other details can be seen in the bidding document. The Purchaser shall not be held liable for any delays due to system failure beyond its control. Even though the system will attempt to notify the bidders of any bid updates, the Purchaser shall not be liable for any information not received by the bidder. It is the bidders' responsibility to verify the website for the latest information related to this bid.

10. The address (es) referred to above is (are):

*Project on Climate Resilient Agriculture*

*Project Director*

*PoCRA, 30-B, Arcade, World Trade Centre, Cuffe Parade , Mumbai 400 005*

*Office phone number: +91-22-22163351*

*Email id: [procurement.pmu@mahapocra.gov.in](mailto:procurement.pmu@mahapocra.gov.in)*

*Web Site: <http://mahapocra.gov.in>*

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## **PART 1 – BIDDING PROCEDURES**

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## Section I - Instructions to Bidders

### A. GENERAL

#### 1. Scope of Bid

- 1.1 The Purchaser, as indicated **in the BDS**, or its duly authorized Purchasing Agent if so specified **in the BDS** (interchangeably referred to as “the Purchaser” issues this bidding 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 RFB are specified **in the BDS**.
- 1.2 Unless otherwise stated, throughout this bidding document definitions and interpretations shall be as prescribed in the Section VIII, General Conditions of Contract.
- 1.3 Throughout this bidding document:
  - (a) the term “in writing” means communicated in written form (e.g. by mail, e-mail, fax, including if specified **in the BDS**, 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.

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- 2. Source of Funds**
- 2.1 The Borrower or Recipient (hereinafter called “Borrower”) indicated **in the BDS** 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 BDS** toward the project named **in the BDS**. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this bidding 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, Bidders shall permit and shall cause their agents (whether declared or not), subcontractors, subconsultants, service providers, suppliers, and their 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 Bidders**
- 4.1 A Bidder may be a firm that is a private entity, a state-owned enterprise or institution subject to ITB 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 Bidding process and, in the event the JV is awarded the Contract, during contract execution. Unless specified **in the BDS**, there is no limit on the number of members in a JV.
- 4.2 A Bidder shall not have a conflict of interest. Any Bidder found to have a conflict of interest shall be disqualified. A Bidder may be considered

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to have a conflict of interest for the purpose of this Bidding process, if the Bidder:

- (a) directly or indirectly controls, is controlled by or is under common control with another Bidder; or
- (b) receives or has received any direct or indirect subsidy from another Bidder; or
- (c) has the same legal representative as another Bidder; or
- (d) has a relationship with another Bidder, directly or through common third parties, that puts it in a position to influence the Bid of another Bidder, or influence the decisions of the Purchaser regarding this Bidding 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 Bid; or
- (f) 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 BDS ITB 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 bidding document or specifications of the Contract, and/or the Bid 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 Bidding process and execution of the Contract.

4.3 A firm that is a Bidder (either individually or as a JV member) shall not participate as a Bidder or as JV member in more than one Bid except for permitted alternative Bids. Such participation shall result in the disqualification of all Bids in which the firm is involved. However, this does not limit the participation of a Bidder as subcontractor in another Bid or of a firm as a subcontractor in more than one Bid.

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- 4.4 A Bidder may have the nationality of any country, subject to the restrictions pursuant to ITB 4.8. A Bidder shall be deemed to have the nationality of a country if the Bidder 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 Bidder 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 BDS**.
- 4.6 Bidders 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 Bidder shall not be under suspension from bidding 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 Bidding is open for all eligible Bidders, unless otherwise specified in ITB 15.2.
- 4.10 A Bidder shall provide such documentary evidence of eligibility satisfactory to the Purchaser, as the Purchaser shall reasonably request.

## 5. Eligible Goods and Services

- 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.
- 5.1 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 bidding 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 supply and install under the Contract, plus all associated documentation, and all other materials and goods to be 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 Bidder and as specified in the Contract.
- 5.3 For purposes of ITB 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 BIDDING DOCUMENT

### 6. Sections of Bidding Document

- 6.1 The bidding 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 ITB 8:

#### **PART 1 - Bidding Procedures**

Section I - Instructions to Bidders (ITB)

Section II - Bid Data Sheet (BDS)

Section III - Evaluation and Qualification Criteria

Section IV - Bidding 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 Bids (RFB) issued by the Purchaser is not part of this bidding 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-Bid meeting (if any), or Addenda to the bidding document in accordance with ITB 8. In case of any contradiction, documents obtained directly from the Purchaser shall prevail.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding document and to furnish with its Bid all information or documentation as is required by the bidding document.

### **7. Clarification of Bidding Document, Site Visit, Pre-bid Meeting**

- 7.1 A Bidder requiring any clarification of the bidding document shall contact the Purchaser in writing at the Purchaser's address specified **in the BDS** or raise its enquiries during the pre-Bid meeting if provided for in accordance with ITB 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 Bids within a period specified **in the BDS**. The Purchaser's shall forward copies of its response to all Bidders who have acquired the bidding document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. If so specified **in the BDS**, the Purchaser shall also promptly publish its response at the web page identified **in the BDS**. Should the Purchaser deem it necessary to amend the bidding document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 23.2.

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- 7.2 The Bidder 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 Bid and entering into a contract. The costs of visiting the site shall be at the Bidder's own expense.
- 7.3 The Bidder 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 Bidder, 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 Bidder's designated representative is invited to attend a pre-Bid meeting and/or a site visit, if provided for **in the BDS**. 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 Bidder 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-Bid 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 Bidders who have acquired the bidding document in accordance with ITB 6.3. Any modification to the bidding document that may become necessary as a result of the pre-Bid meeting shall be made by the Purchaser exclusively through the issue of an Addendum pursuant to ITB 8 and not through the minutes of the pre-Bid meeting.
- 7.7 Nonattendance at the pre-Bid meeting will not be a cause for disqualification of a Bidder.

**8. Amendment of Bidding Document**

- 8.1 At any time prior to the deadline for submission of Bids, the Purchaser may amend the bidding document by issuing addenda.
- 8.2 Any addendum issued shall be part of the bidding document and shall be communicated in writing to all who have obtained the bidding document from the Purchaser in accordance with ITB 6.3. The Purchaser shall also promptly publish the addendum on the Purchaser's web page in accordance with ITB 7.1.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Purchaser may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 23.2.

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## C. PREPARATION OF BIDS

- 9. Cost of Bidding** 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Purchaser shall not be responsible or liable for those costs, regardless of the conduct or outcome of the Bidding process.
- 10. Language of Bid** 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser, shall be written in the language specified **in the BDS**. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified **in the BDS**, in which case, for purposes of interpretation of the Bid, such translation shall govern.
- 11. Documents  
Comprising the Bid** 11.1 The Bid 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 Bidding 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 BID".
- 11.2 The Technical Part submitted by the Bidder shall comprise the following:
- (a) **Letter of Bid – Technical Part** prepared in accordance with ITB 12;
  - (b) **Bid Security or Bid-Securing Declaration** in accordance with ITB 20;
  - (c) **Alternative Bid – Technical Part:** if permissible, in accordance with ITB 13, the Technical Part of any Alternative Bid;
  - (d) **Authorization:** written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 21.3, and in accordance with ITB 21.4 in case of a JV;
  - (e) **Eligibility of Information System:** documentary evidence established in accordance with ITB 14.1 that the Information System offered by the Bidder in its Bid or in any alternative Bid, if permitted, are eligible;
  - (f) **Bidder's Eligibility:** documentary evidence in accordance with ITB 15 establishing the Bidder's eligibility and qualifications to perform the contract if its Bid is accepted;

- (g) **Conformity:** documentary evidence established in accordance with ITB 16 that the Information System offered by the Bidder conform to the bidding document;
- (h) **Subcontractors:** list of subcontractors, in accordance with ITB 16.4;
- (i) **Intellectual Property:** a list of: Intellectual Property as defined in GCC Clause 15;
  - (i) all Software included in the Bid, 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 Bid;
 

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 BDS**.

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

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

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

11.5 In addition to the requirements under ITB 11.2, Bids submitted by a JV shall include 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

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intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all members and submitted with the Bid, 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 Bidder shall furnish in the Letter of Bid – Financial Part information on commissions and gratuities, if any, paid or to be paid to agents or any other party relating to this Bid.

## 12. Letters of Bid and Price Schedules

12.1 The Bidder shall complete the Letter of Bid - Technical Part, and Letter of Bid – Financial Part, including the appropriate Price Schedules, using the relevant forms furnished in Section IV, Bidding Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under ITB 21.5. All blank spaces shall be filled in with the information requested.

## 13. Alternative Bids

13.1 The BDS indicates whether alternative Bids are allowed. If they are allowed, **the BDS** will also indicate whether they are permitted in accordance with ITB 13.3, or invited in accordance with ITB 13.2 and/or ITB 13.4.

13.2 When alternatives to the Time Schedule are explicitly invited, a statement to that effect will be included **in the BDS**, and the method of evaluating different time schedules will be described in Section III, Evaluation and Qualification Criteria.

13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the Purchaser's requirements as described in the bidding 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 Bidder with the Most Advantageous Bid conforming to the basic technical requirements shall be considered by the Purchaser.

13.4 When Bidders are invited **in the BDS** 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 ITB 31 and ITB 35.

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

14.1 To establish the eligibility of the Information System in accordance with ITB 5, Bidders shall complete the country of origin declarations in the Price Schedule Forms, included in Section IV, Bidding Forms.

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

15.1 To establish its eligibility and qualifications to perform the Contract in accordance with Section III, Evaluation and Qualification Criteria, the Bidder shall provide the information requested in the corresponding information sheets included in Section IV, Bidding Forms.

15.2 In the event that prequalification of potential Bidders has been undertaken as stated **in the BDS**, only Bids from prequalified Bidders shall be considered for award of Contract. These qualified Bidders should submit with their Bids any information updating their original prequalification applications or, alternatively, confirm in their Bids that the originally submitted prequalification information remains essentially correct as of the date of Bid submission.

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

16.1 Pursuant to ITB 11.2 (g), the Bidder shall furnish, as part of its Bid documents establishing the conformity to the bidding documents of the Information System that the Bidder proposes to design, supply and install under the Contract.

16.2 The documentary evidence of conformity of the Information System to the bidding documents including:

- (a) Preliminary Project Plan describing, among other things, the methods by which the Bidder will carry out its overall management and coordination responsibilities if awarded the Contract, and the human and other resources the Bidder proposes to use. The Preliminary Project Plan must also address any other topics **specified in the BDS**. In addition, the Preliminary Project Plan should state the Bidder'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 Bidder proposes to coordinate the activities of all involved parties;
- (b) written confirmation that the Bidder accepts responsibility for the successful integration and inter-operability of all components of the Information System as required by the bidding 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 Bidder is encouraged to use the Technical Responsiveness Checklist (or Checklist Format) in the Sample Bidding Forms (Section IV). The commentary shall include explicit cross-references to the relevant pages in the supporting materials included in the bid. Whenever a discrepancy arises between the item-by-item commentary and any catalogs, technical specifications,

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or other preprinted materials submitted with the bid, 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 BDS ITB 17.2 required Bidders to bid.
- 16.3 References to brand names or model numbers or national or proprietary standards designated by the Purchaser in the bidding documents are intended to be descriptive and not restrictive. Except where explicitly **prohibited in the BDS** for specific items or standards, the Bidder may substitute alternative brand/model names or standards in its bid, 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 Bidder intends to purchase or subcontract, the Bidder shall give details of the name and nationality of the proposed subcontractors, including manufacturers, for each of those items. In addition, the Bidder shall include in its Bid 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 Bidder shall be responsible for ensuring that any subcontractor proposed complies with the requirements of ITB 4, and that any goods or services to be provided by the subcontractor comply with the requirements of ITB 5 and ITB 16.1.

## **17. Bid 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 Bidder to fulfill the requirements of the Information System, must be priced separately and summarized in the corresponding cost tables in the Sample Bidding 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 BDS**, the Bidder must also bid 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 Bidding

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Forms (Section IV), in accordance with the instructions provided in the tables and in the manner specified below:

- (a) **if specified in the BDS**, the Bidder must also bid 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 Bidder'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. Bidders 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 Bidder has left blank in the cost tables provided in the Sample Bid 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 bid and, provided that the bid is substantially responsive, an adjustment to the bid price will be made during bid evaluation in accordance with ITB 30.3.
- 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 BDS**, as follows:
- (a) Goods supplied from outside the Purchaser's country:  
**Unless otherwise specified in the BDS**, 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 Bidder shall be free to use transportation through carriers



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registered in any eligible countries. Similarly, the Bidder 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;

(b) Inland transportation.

- 17.6 **Unless otherwise stated in the BDS**, 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 ITB 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 ITB 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 BDS**, 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 bidding documents (as, e.g., a requirement for the Bidder to include the travel and subsistence costs of trainees).
- 17.9 **Unless otherwise specified in the BDS**, prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to increases on any account. Bids submitted that are subject to price adjustment will be rejected.

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**18. Currencies of Bid and Payment**

- 18.1 The currency(ies) of the Bid and currencies of payment shall be the same. The Bidder shall quote in the currency of the Purchaser's Country the portion of the Bid price that corresponds to expenditures incurred in the currency of the Purchaser's Country, unless otherwise specified **in the BDS**.
- 18.2 The Bidder may express the Bid price in any currency. If the Bidder 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 Bids**

- 19.1 Bids shall remain valid for the period specified **in the BDS** after the Bid submission deadline date prescribed by the Purchaser in accordance with ITB 23.1. A Bid valid for a shorter period shall be rejected by the Purchaser as nonresponsive.
- 19.2 In exceptional circumstances, prior to the expiration of the Bid validity period, the Purchaser may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a Bid Security is requested in accordance with ITB 20.1, it shall also be extended for twenty-eight days (28) beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its Bid Security. A Bidder granting the request shall not be required or permitted to modify its Bid, except as provided in ITB 19.3.
- 19.3 If the award is delayed by a period exceeding fifty-six (56) days beyond the expiry of the initial Bid validity, the Contract price shall be determined as follows:
- (a) in case of fixed price contracts, the contract price shall be the Bid price adjusted by a factor or factors specified **in the BDS**;
  - (b) in the case of an adjustable price contracts, no adjustments shall be made;
  - (c) in any case, Bid evaluation shall be based on the Bid Price without taking into consideration the applicable correction from those indicated above.

**20. Bid Security**

- 20.1 The Bidder shall furnish as part of Technical Part of its Bid, either a Bid-Securing Declaration or a Bid Security as specified **in the BDS**, in original form and, in the case of a Bid Security, in the amount and currency specified **in the BDS**.
- 20.2 A Bid-Securing Declaration shall use the form included in Section IV, Bidding Forms.

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20.3 If a Bid Security is specified pursuant to ITB 20.1, the bid security shall be a demand guarantee in any of the following forms at the Bidder'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 BDS,**

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 Bid submission, that a correspondent financial institution is not required.

20.4 In the case of a bank guarantee, the Bid Security shall be submitted either using the Bid Security Form included in Section IV, Bidding Forms or in another substantially similar format approved by the Purchaser prior to Bid submission. In either case, the form must include the complete name of the Bidder. The Bid Security shall be valid for twenty-eight days (28) beyond the original validity period of the Bid, or beyond any period of extension if requested under ITB 19.2.

20.5 If a Bid Security or a Bid-Securing Declaration is specified pursuant to ITB 20.1, any Bid not accompanied by a substantially responsive Bid Security or Bid-Securing Declaration shall be rejected by the Purchaser as non-responsive.

20.6 If a Bid Security is specified pursuant to ITB 20.1, the Bid Security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the Performance Security pursuant to ITB 50.

20.7 The Bid Security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required Performance Security.

20.8 The Bid Security may be forfeited or the Bid-Securing Declaration executed:

- (a) if a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Letter of Bid-Technical Part and repeated in the Letter of Bid-Financial Part; or
- (b) if the successful Bidder fails to:
  - (i) sign the Contract in accordance with ITB 49; or
  - (ii) furnish a performance security in accordance with ITB 50.

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

20.10 If a Bid Security is not required **in the BDS**, and;

- (a) if a Bidder withdraws its Bid during the period of Bid validity specified by the Bidder on the Letter of Bid Technical Part and repeated in the Letter of Bid - Financial Part, except as provided in ITB 19.2; or
- (b) if the successful Bidder fails to: sign the Contract in accordance with ITB 49; or furnish a Performance Security in accordance with ITB 50;

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

## 21. Format and Signing of Bid

21.1 The Bidder shall prepare the Bid in accordance with ITB 11 and ITB 22.

21.2 Bidders shall mark as “CONFIDENTIAL” information in their Bids 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 Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written confirmation as specified **in the BDS** and shall be attached to the Bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid where entries or amendments have been made shall be signed or initialed by the person signing the Bid.
- 21.4 In case the Bidder is a JV, the Bid 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 Bid.

#### **D. SUBMISSION OF BIDS**

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

- 22.1 The Bidder shall deliver the Bid in two separate sealed envelopes (two (2) envelope process) the Technical Part and the Financial Part). These two envelopes shall be enclosed in a sealed outer envelope marked "ORIGINAL BID".
- 22.2 In addition, the Bidder shall submit copies of the Bid in the number specified **in the BDS**. 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 Bidder shall place both of these envelopes in a separate, sealed outer envelope marked "BID COPIES". In the event of any discrepancy between the original and the copies, the original shall prevail. If alternative Bids are permitted in accordance with ITB 13, the alternative Bids shall be submitted as follows: the original of the alternative Bid Technical Part shall be placed in a sealed envelope marked "ALTERNATIVE BID – TECHNICAL PART" and the Financial Part shall be placed in a sealed envelope marked "ALTERNATIVE BID – FINANCIAL PART" and these two separate sealed envelopes then enclosed within a sealed outer envelope marked "ALTERNATIVE BID – ORIGINAL", the copies of the alternative Bid will be placed in separate sealed envelopes marked "ALTERNATIVE BID – COPIES OF TECHNICAL PART", and "ALTERNATIVE BID – COPIES OF FINANCIAL PART" and enclosed in a separate sealed outer envelope marked "ALTERNATIVE BID - COPIES".
- 22.3 The envelopes marked "ORIGINAL BID" and "BID COPIES" (and, if appropriate, a third envelope marked "ALTERNATIVE BID") shall be enclosed in a separate sealed outer envelope for submission to the Purchaser.
- 22.4 All inner and outer envelopes shall:

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- (a) bear the name and address of the Bidder;
  - (b) be addressed to the Purchaser in accordance with ITB 23.1;
  - (c) bear the specific identification of this Bidding process indicated in accordance with ITB 1.1; and
  - (d) bear a warning not to open before the time and date for Bid 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 Bid.
- 23. Deadline for Submission of Bids**
- 23.1 Bids must be received by the Purchaser at the address and no later than the date and time indicated **in the BDS**. When so specified **in the BDS**, Bidders shall have the option of submitting their Bids electronically. Bidders submitting Bids electronically shall follow the electronic Bid submission procedures specified **in the BDS**.
- 23.2 The Purchaser may, at its discretion, extend this deadline for submission of Bids by amending the bidding documents in accordance with ITB 8, in which case all rights and obligations of the Purchaser and Bidders will thereafter be subject to the deadline as extended.
- 24. Late Bids**
- 24.1 The Purchaser shall not consider any Bid that arrives after the deadline for submission of Bids, in accordance with ITB 23. Any Bid received by the Purchaser after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.
- 25. Withdrawal, Substitution, and Modification of Bids**
- 25.1 A Bidder may withdraw, substitute, or modify its Bid 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 ITB 21.3, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be:
- (a) prepared and submitted in accordance with ITB 21 and ITB 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 Bids, in accordance with ITB 23.

- 25.2 Bids requested to be withdrawn in accordance with ITB 25.1 shall be returned unopened to the Bidders.
- 25.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified by the Bidder on the Letter of Bid – Technical Part and repeated in Letter of Bid – Financial Part, or any extension thereof.

### **E. Public Opening of Technical Parts of Bids**

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

- 26.1 Except as in the cases specified in ITB 24 and ITB 25.2, the Purchaser shall conduct the opening of Technical Parts of the Bids in public, in the presence of Bidders` designated representatives and anyone who chooses to attend, and at the address, date and time specified **in the BDS**. Any specific electronic Bid opening procedures required if electronic bidding is permitted in accordance with ITB 23.1, shall be as specified **in the BDS**.
- 26.2 First, the written notice of withdrawal in the envelopes marked “Withdrawal” shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. No Bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at Bid opening.
- 26.3 Next, envelopes marked “Substitution” shall be opened and read out and exchanged with the corresponding Bid being substituted, and the substituted Bid shall not be opened, but returned to the Bidder. No Bid substitution shall be permitted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out at Bid opening.
- 26.4 Next, envelopes marked “Modification” shall be opened and read out with the corresponding Bid. No Bid modification shall be permitted unless the corresponding modification notice contains a valid authorization to request the modification and is read out at Bid opening.
- 26.5 Next, all other envelopes marked “TECHNICAL PART” shall be opened one at a time. All envelopes marked “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 of the Bids. On opening the envelopes marked “TECHNICAL PART” the Purchaser shall read out: the name of the Bidder and whether there is a modification; and Alternative Bid – Technical Part; the presence or absence of a Bid Security or Bid-Securing Declaration, if required and any other details as the Purchaser may consider appropriate.
- 26.6 Only Technical Parts of the Bids and Alternative Bid - Technical Parts that are read out at Bid opening shall be considered further in

the evaluation. The Letter of Bid – Technical Part and the separate sealed envelope marked “FINANCIAL PART” are to be initialed by representatives of the Purchaser attending Bid opening in the manner specified **in the BDS**.

- 26.7 At the bid opening, the Purchaser shall neither discuss the merits of any Bid nor reject any Bid (except for late Bids, in accordance with ITB 24.1).
- 26.8 Following the opening of the Technical Parts of the Bid the Purchaser shall prepare a record of the Bid opening that shall include, as a minimum:
- (a) the name of the Bidder and whether there is a withdrawal, substitution, or modification;
  - (b) the presence or absence of a duly sealed envelope marked “FINANCIAL PART”;
  - (c) if applicable, any Alternative Bid - Technical Part; and
  - (d) the presence or absence of a Bid Security or a Bid-Securing Declaration.
- 26.9 The Bidders’ representatives who are present shall be requested to sign the record. The omission of a Bidder’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 Bidders.

## **F. Evaluation and Comparison of Bids – General Provisions**

- 27. Confidentiality**
- 27.1 Information relating to the evaluation of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with the Bidding process until the Notification of Intention to Award the Contract is transmitted to all Bidders in accordance with ITB 44.
- 27.2 Any effort by a Bidder to influence the Purchaser in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.
- 27.3 Notwithstanding ITB 27.2, from the time of Bid opening to the time of Contract award, if any Bidder wishes to contact the Purchaser on any matter related to the Bidding process, it should do so in writing.



- 28. Clarification of Bids**
- 28.1 To assist in the examination, evaluation, and comparison of the Bids, and qualification of the Bidders, the Purchaser may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder 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 Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Purchaser in the evaluation of the Bids, in accordance with ITB 36.
- 28.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the Purchaser's request for clarification, its Bid may be rejected.
- 29. Deviations, Reservations, and Omissions**
- 29.1 During the evaluation of Bids, the following definitions apply:
- (a) "Deviation" is a departure from the requirements specified in the bidding document;
  - (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the bidding document; and
  - (c) "Omission" is the failure to submit part or all of the information or documentation required in the bidding document.
- 30. Nonmaterial Nonconformities**
- 30.1 Provided that a Bid is substantially responsive, the Purchaser may waive any nonconformity in the Bid that does not constitute a material deviation, reservation or omission.
- 30.2 Provided that a Bid is substantially responsive, the Purchaser may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
- 30.3 Provided that a Bid is substantially responsive, the Purchaser shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component in the manner specified **in the BDS**.

## **G. Evaluation of Technical Parts of Bids**

- 31. Evaluation of Technical Parts of Bids**
- 31.1 The Purchaser shall use the criteria and methodologies listed in this ITB and Section III, Evaluation and Qualification criteria. No other evaluation criteria or methodologies shall be permitted. By applying

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the criteria and methodologies the Purchaser shall determine the Most Advantageous Bid.

### **Preliminary Examination**

31.2 The Purchaser will examine the bids, to determine whether they have been properly signed, whether required sureties have been furnished and are substantially complete (e.g., not missing key parts of the bid or silent on excessively large portions of the Technical Requirements). In the case where a pre-qualification process was undertaken for the Contract(s) for which these bidding documents have been issued, the Purchaser will ensure that each bid is from a pre-qualified bidder and, in the case of a Joint Venture, that members and structure of the Joint Venture are unchanged from those in the pre-qualification.

### **Technical Evaluation**

31.3 The Purchaser will examine the information supplied by the Bidders Pursuant to ITB 11 and ITB 16, and in response to other requirements in the Bidding document, taking into account the following factors:

- (a) overall completeness and compliance with the Technical Requirements; and deviations from the Technical Requirements;
- (b) suitability of the Information System offered in relation to the conditions prevailing at the site; and the suitability of the implementation and other services proposed, as described in the Preliminary Project Plan included in the bid;
- (c) achievement of specified performance criteria by the Information System;
- (d) compliance with the time schedule called for by the Implementation Schedule and any alternative time schedules offered by Bidders, as evidenced by a milestone schedule provided in the Preliminary Project Plan included in the bid;
- (e) type, quantity, quality, and long-term availability of maintenance services and of any critical consumable items necessary for the operation of the Information System;
- (f) any other relevant technical factors that the Purchaser deems necessary or prudent to take into consideration; and
- (g) any proposed deviations in the bid to the contractual and technical provisions stipulated in the bidding documents.

31.4 Where alternative technical solutions have been allowed in accordance with ITB 13, and offered by the Bidder, the Purchaser will make a similar evaluation of the alternatives. Where alternatives have not been allowed but have been offered, they shall be ignored.

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**32. Determination of Responsiveness**

- 32.1 The Purchaser's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in ITB 11.
- 32.2 A substantially responsive Bid is one that meets the requirements of the bidding 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 Information System specified in the Contract; or
    - (ii) limit in any substantial way, inconsistent with the bidding document, the Purchaser's rights or the Bidder's obligations under the proposed Contract; or
  - (b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
- 32.3 The Purchaser shall examine the technical aspects of the Bid in particular, to confirm that all requirements of Section VII, Purchaser's Requirements have been met without any material deviation, reservation, or omission.
- 32.4 To be considered responsive to the bidding documents, Bidders must have submitted Bids:
- (a) for which detailed Bid evaluation using the same standards for compliance determination as listed in ITB 29 and ITB 32.3 confirms that the Bids are commercially and technically responsive, and include the hardware, Software, related equipment, products, Materials, and other Goods and Services components of the Information System in substantially the full required quantities for the entire Information System or, if allowed in the BDS ITB 35.5, the individual Subsystem, lot or slice Bid on; and are deemed by the Purchaser as commercially and technically responsive; and
  - (b) that offer Information Technologies that are proven to perform up to the standards promised in the bid by having successfully passed the performance, benchmark, and/or functionality tests the Purchaser may require, pursuant to ITB 33.3.
- 32.5 If a bid is not substantially responsive to the requirements of Bidding Documents, it shall be rejected by the Purchaser and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

### **33. Qualification of Bidders**

- 33.1 The Purchaser shall determine to its satisfaction whether all eligible Bidders, whose Bids have been determined to be substantially responsive to the bidding document, meet the qualifying criteria specified in Section III, Evaluation and Qualification Criteria.
- 33.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 15. The determination shall not take into consideration the qualifications of other firms such as the Bidder's subsidiaries, parent entities, affiliates, subcontractors (other than manufacturers and subcontractors proposed by the Bidder for major items of supply or services listed by the purchaser in the bidding document, and evaluated for their acceptability), or any other firm(s) different from the Bidder.
- 33.3 If so **specified in the BDS**, the Purchaser will carry out tests **as detailed in the BDS**, to determine that the performance or functionality of the Information System offered meets those stated in the Technical Requirements. These tests will be carried out only in respect of Bidders that meet the qualification requirements stated in ITB 33.1 and ITB 33.2 above.
- 33.4 The capabilities of the manufacturers and subcontractors proposed by the Bidders for identified major items of supply or services will also be evaluated for acceptability in accordance with Section III, Evaluation and Qualification Criteria. Should a manufacturer or subcontractor be determined to be unacceptable, the Bid will not be rejected, but the Bidder, that is subsequently determined to have offered the Most Advantageous Bid, will be required to substitute an acceptable manufacturer or subcontractor without any change to the Bid price. Prior to signing the Contract, participation of the acceptable manufacturers or subcontractors shall be confirmed with a letter of intent between the parties as needed, and the corresponding Appendix to the Contract Agreement shall be completed, listing the approved manufacturers or subcontractors for each item concerned.
- 33.5 Only Bids that are both substantially responsive to the bidding document, and meet all Qualification Criteria shall have their envelopes marked "FINANCIAL PART" opened at the second public opening.

## **H. Public Opening of Financial Parts of Bids**

### **34. Public Opening of Financial Parts**

- 34.1 Following the completion of the evaluation of the Technical Parts of the Bids, and the Bank has issued its no objection (if applicable), the Purchaser shall notify in writing those Bidders who have failed to meet the Qualification Criteria and/or whose Bids were considered non-responsive to the requirements in the bidding document, advising them of the following information:

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- (a) the grounds on which their Technical Part of Bid failed to meet the requirements of the bidding document;
  - (b) their envelope marked “Financial Part” will be returned to them unopened after the completion of the bid evaluation process and the signing of the Contract;
  - (c) notify them of the date, time and location of the public opening of the envelopes marked ‘Financial Part’.
- 34.2 The Purchaser shall, simultaneously, notify in writing those Bidders whose Technical Parts have been evaluated as substantially responsive to the bidding document and met the Qualification Criteria, advising them of the following information:
- (a) their Bid has been evaluated as substantially responsive to the bidding document and met the Qualification Criteria; and
  - (b) their envelope marked “Financial Part” will be opened at the public opening of Financial Parts;
  - (c) notify them of the date, time and location of the public opening of the envelopes marked “Financial Part”.
- 34.3 The opening date should allow Bidders sufficient time to make arrangements for attending the opening. The Financial Part of the Bid shall be opened publicly in the presence of Bidders’ designated representatives and anyone who chooses to attend.
- 34.4 At this public opening the Financial Parts will be opened by the Purchaser in the presence of Bidders, or their designated representatives and anyone else who chooses to attend. Bidders who met the Qualification Criteria and whose Bids were evaluated as substantially responsive will have their envelopes marked “FINANCIAL PART” opened at the second public opening. Each of these 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 read out the names of each Bidder, and the total Bid prices, per lot (contract) if applicable, including any discounts and Alternative Bid - Financial Part, and any other details as the Purchaser may consider appropriate.
- 34.5 Only envelopes of Financial Part of Bids, Financial Parts of Alternative Bids and discounts that are opened and read out at Bid opening shall be considered further for evaluation. The Letter of Bid - Financial Part and the Price Schedules are to be initialed by a representative of the Purchaser attending the Bid opening in the manner specified **in the BDS**.
- 34.6 The Purchaser shall neither discuss the merits of any Bid nor reject any envelopes marked “FINANCIAL PART”.

- 34.7 The Purchaser shall prepare a record of the Financial Part of the Bid opening that shall include, as a minimum:
- (a) the name of the Bidder whose Financial Part was opened;
  - (b) the Bid price, per lot (contract) if applicable, including any discounts; and
  - (c) if applicable, any Alternative Bid - Financial Part.
- 34.8 The Bidders whose envelopes marked ‘FINANCIAL PART’ have been opened or their representatives who are present shall be requested to sign the record. The omission of a Bidder’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 Bidders.

## I. Evaluation of Financial Parts of Bids

### 35. Evaluation of Financial Parts of Bids

- 35.1 If specified **in the BDS**, the Purchaser's evaluation of responsive Bids will take into account technical factors, in addition to cost factors. An Evaluated Bid Score (B) will be calculated for each responsive Bid using the formula, specified in Section III, Evaluation and Qualification Criteria, which permits a comprehensive assessment of the Bid cost and the technical merits of each Bid.
- 35.2 Where alternative technical solutions have been allowed in accordance with ITB 13, and offered by the Bidder, the Purchaser will make a similar evaluation of the Alternatives – Financial Parts. Where alternatives have not been allowed but have been offered, they shall be ignored.
- 35.3 To evaluate a Bid, the Purchaser shall consider the following:
- (a) the Bid 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 ITB 36.1;
  - (c) price adjustment due to discounts offered in accordance with ITB 34.7;
  - (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 37;
  - (e) price adjustment due to quantifiable nonmaterial nonconformities in accordance with ITB 30.3; and
  - (f) the evaluation factors indicated in Section III, Evaluation and Qualification Criteria.
- 35.4 If price adjustment is allowed in accordance with ITB 17.9, 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 Bid evaluation.
- 35.5 The Purchaser will evaluate and compare the Bids that have been determined to be substantially responsive, pursuant to ITB 32. The evaluation will be performed assuming either that:
- (a) the Contract will be awarded to the Most Advantageous Bid for the entire Information System; or
  - (b) if specified **in the BDS**, Contracts will be awarded to the Bidders for each individual Subsystem, lot, or slice defined in the Technical Requirements whose Bids result in the Most Advantageous Bid/Bids for the entire System.

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

**36. Correction of  
Arithmetical  
Errors**

36.1 Provided that the Bid is substantially responsive, 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.

36.2 A Bidder shall be requested to accept the correction of arithmetical errors. Failure to accept the correction in accordance with ITB 36.1 shall result in the rejection of the Bid.

**37. Conversion to  
Single Currency**

37.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified **in the BDS**.

**38. Margin of  
Preference**

38.1 No margin of domestic preference shall apply.

**39. Comparison of  
Financial Parts  
of Bids**

39.1 The Purchaser shall compare all substantially responsive Bids in accordance with ITB 35.3 to determine the lowest evaluated cost.

**40. Abnormally Low  
Bids**

40.1 An Abnormally Low Bid is one where the Bid price in combination with other constituent elements of the Bid appears unreasonably low to the extent that the Bid price raises material concerns as to the capability of the Bidder to perform the Contract for the offered Bid Price.

40.2 In the event of identification of a potentially Abnormally Low Bid, the Purchaser shall seek written clarifications from the Bidder, including detailed price analyses of its Bid 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 bidding document.

40.3 After evaluation of the price analyses, in the event that the Purchaser determines that the Bidder has failed to demonstrate its capability to



perform the Contract for the offered Bid Price, the Purchaser shall reject the Bid.

**41. Unbalanced or Front Loaded Bids**

41.1 If the Bid that is evaluated as the lowest evaluated cost is, in the Purchaser's opinion, seriously unbalanced or front loaded the Purchaser may require the Bidder to provide written clarifications. Clarifications may include detailed price analyses to demonstrate the consistency of the Bid prices with the scope of information systems, installations, proposed methodology, schedule and any other requirements of the bidding document.

41.2 After the evaluation of the information and detailed price analyses presented by the Bidder, the Purchaser may:

- (a) accept the Bid; or
- (b) if appropriate, require that the total amount of the Performance Security be increased, at the expense of the Bidder, to a level not exceeding ten percent (10%) of the Contract Price; or
- (c) reject the Bid.

**42. Purchaser's Right to Accept Any Bid, and to Reject Any or All Bids**

42.1 The Purchaser reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, Bid securities, shall be promptly returned to the Bidders.

**43. Standstill Period**

43.1 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 ITB 48. The Standstill Period commences the day after the date the Purchaser has transmitted to each Bidder the Notification of Intention to Award the Contract. Where only one Bid is submitted, or if this contract is in response to an emergency situation recognized by the Bank, the Standstill Period shall not apply.

**44. Notification of Intention to Award**

44.1 The Purchaser shall send to each Bidder the Notification of Intention to Award the Contract to the successful Bidder. The Notification of Intention to Award shall contain, at a minimum, the following information:

- (a) the name and address of the Bidder submitting the successful Bid;
- (b) the Contract price of the successful Bid;
- (c) the total combined score of the successful Bid;
- (d) the names of all Bidders who submitted Bids, and their Bid prices as readout and as evaluated prices and technical scores (if applicable);

- (e) a statement of the reason(s) the Bid (of the unsuccessful Bidder 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.

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## J. AWARD OF CONTRACT

- 45. Award Criteria**
- 45.1 Subject to ITB 42, the Purchaser shall award the Contract to the successful Bidder. This is the Bidder whose Bid has been determined to be the Most Advantageous Bid. The determination of the Most Advantageous Bid will be made in accordance to one of the two options as defined in **the BDS**. The methodology options are:
- (a) when **rated criteria are used**: The Bidder that meets the qualification criteria and whose Bid:
    - (i) is substantially responsive; and
    - (ii) is the best evaluated Bid (i.e. the Bid with the highest combined technical/quality/price score); or
  - (b) when **rated criteria are not used**: The Bidder that meets the qualification criteria and whose Bid has been determined to be:
    - (i) substantially responsive to the bidding document; and
    - (ii) the lowest evaluated cost.
- 46. Purchaser's Right to Vary Quantities at Time of Award**
- 46.1 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 BDS**.
- 47. Notification of Award**
- 47.1 Prior to the expiration of the Bid Validity Period and upon expiry of the Standstill Period, specified in ITB 43.1 or any extension thereof, and, upon satisfactorily addressing any complaint that has been filed within the Standstill Period, the Purchaser shall notify the successful Bidder, in writing, that its Bid 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").

47.2 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 Bidders that submitted Bids, and their Bid prices as read out at Bid opening, and as evaluated;
- d) name of Bidders whose Bids were rejected and the reasons for their rejection;
- e) the name of the successful Bidder, the final total contract price, the contract duration and a summary of its scope; and
- f) successful Bidder's Beneficial Ownership Disclosure Form, if specified in BDS ITB 48.1.

47.3 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. The Purchaser shall also publish the Contract Award Notice in UNDB online.

47.4 Until a formal contract is prepared and executed, the Notification of Award shall constitute a binding Contract.

#### **48. Debriefing by the Purchaser**

48.1 On receipt of the Purchaser's Notification of Intention to Award referred to in ITB 44, an unsuccessful Bidder 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 Bidders whose request is received within this deadline.

48.2 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 Bidders of the extended standstill period.

48.3 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.

48.4 Debriefings of unsuccessful Bidders may be done in writing or verbally. The Bidder shall bear their own costs of attending such a debriefing meeting.

#### 49. Signing of Contract

49.1 The Purchaser shall send to the successful Bidder the Letter of Acceptance including the Contract Agreement, and, if **specified in the BDS**, a request to submit the Beneficial Ownership Disclosure Form providing additional information on its beneficial ownership. The Beneficial Ownership Disclosure Form, if so requested, shall be submitted within eight (8) Business Days of receiving this request.

49.2 The successful Bidder shall sign, date and return to the Purchaser, the Contract Agreement within twenty-eight (28) days of its receipt.

49.3 Notwithstanding ITB 49.2 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 Bidder shall not be bound by its Bid, always provided, however, that the Bidder 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 Bidder 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.

#### 50. Performance Security

50.1 Within twenty-eight (28) days of the receipt of the Letter of Acceptance from the Purchaser, the successful Bidder shall furnish the performance security in accordance with the General Conditions, subject to ITB 41.2 (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 Bidder is in the form of a bond, it shall be issued by a bonding or insurance company that has been determined by the successful Bidder 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.

50.2 Failure of the successful Bidder 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 Bid Security. In that event the Purchaser may award the Contract to the Bidder offering the next Most Advantageous Bid.

#### 51. Adjudicator

51.1 Unless **the BDS** states otherwise, the Purchaser proposes that the person named **in the BDS** 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 BDS. The proposed hourly fee for the Adjudicator is specified in the BDS. The expenses that would be considered reimbursable to the Adjudicator are also specified **in the BDS**. If a Bidder does not accept the Adjudicator proposed by the Purchaser, it should state its non-acceptance in its Bid Form and make a counterproposal of an Adjudicator and an hourly fee, attaching a résumé of the alternative. If the successful Bidder and the Adjudicator nominated **in the BDS** 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 BDS** and propose a new one. If by the day the Contract is signed, the Purchaser and the successful Bidder 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.

**52. Procurement  
Related  
Complaint**

52.1 The procedures for making a Procurement-related Complaint are as specified **in the BDS**.

## SECTION II - BID DATA SHEET (BDS)

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

ITB Reference	A. General
<b>ITB 1.1</b>	<p>The reference number of the Request for Bids is: <i>IN-MAHAPOCRA-102980</i></p> <p>The Purchaser is <i>Project on Climate Resilient Agriculture (PoCRA), Government of Maharashtra</i></p> <p>The name of the RFB is: <i>Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA)</i></p>
<b>ITB 1.3 (a)</b>	<p>The Purchaser shall use the electronic-procurement system specified in BDS 7.1 to manage this procurement process.</p> <p><a href="https://mahatenders.gov.in">https://mahatenders.gov.in</a></p>
<b>ITB 2.1</b>	<p>The Borrower is: Government of Maharashtra (through Government of India )</p> <p>Loan or Financing Agreement amount: <i>USD 420 Millions</i></p> <p>The name of the Project is: <i>Project on Climate Resilient Agriculture</i></p>
<b>ITB 4.1</b>	<p>Maximum number of members in the JV shall be: 3 (<i>a Lead Member + 2 other Members</i>)</p> <p>(a) A statement to the effect that all members of the joint venture shall be jointly and severally liable for the execution of the entire Contract in accordance with the Contract terms, shall be included in the authorization nominating a Representative or member in charge, as well as in the Bid and in the Agreement [<i>in case of a successful bid</i>].</p> <p>(b) The joint venture agreement should define precisely the division of assignments to each member of JV. All members of JV should have active participation in the execution during the currency of the contract. This should not be varied/ modified subsequently without prior approval of the Purchaser.</p>
<b>ITB 4.5</b>	<p>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>.</p>
<b>ITB 4.11</b>	Deleted.
<b>B. Bidding Document</b>	
<b>ITB 7.1</b>	<p>Replace ITB 7.1 with the following:</p> <p>“7.1. The electronic bidding system <a href="https://mahatenders.gov.in">https://mahatenders.gov.in</a> provides for online clarifications. A Bidder requiring any clarification of the Bidding Document may notify</p>

<b>ITB Reference</b>	<b>A. General</b>
	the Purchaser online. Clarifications requested through any other mode shall not be considered by the Purchaser. The Purchaser will respond to any request for clarification, provided that such request is received prior to the deadline for submission of bids within a period 14 days . Description of clarification sought and the response of the Purchaser shall be uploaded for information of all Bidders without identifying the source of request for clarification. Should the clarification result in changes to the essential elements of the Bidding Documents, the Purchaser shall amend the Bidding Documents following the procedure under ITB 8 and ITB 23.2. It is the bidder’s responsibility to check on the e-procurement system, for any addendum/ amendment/ corrigendum to the bidding document.”
<b>ITB 7.4</b>	A Pre-Bid meeting shall take place at the following date, time and place: First Prebid held on 19th March 2019 Second Prebid on 10th May 2019 Time: IST 11:00 HRS Place: PoCRA office A site visit conducted by the Purchaser <i>shall not be</i> organized.
<b>ITB 7.5</b>	The Bidder is requested, to submit any questions only through the e-procurement portal, not later than one week before the meeting. Clarifications requested through any other mode shall not be considered by the Purchaser.
<b>ITB 7.6</b>	Minutes of the pre-bid 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 uploaded online on e-procurement system. Any modification to the Bidding Documents that may become necessary as a result of the pre-bid meeting shall be made by the <i>Purchaser</i> exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting. It is the bidder’s responsibility to check on the e- procurement system, for any addendum/ amendment/ corrigendum to the bidding documents.
<b>ITB 8.2</b>	Any addendum issued shall be part of the Bidding Documents and shall be deemed to have been communicated to all bidders. The addenda will appear on the e-procurement system under “Latest Corrigendum.
<b>C. Preparation of Bids</b>	
<b>ITB 10.1</b>	The language of the Bid is: English. All correspondence exchange shall be in English language. Language for translation of supporting documents and printed literature is English.



<b>ITB Reference</b>	<b>A. General</b>
<b>ITB 11.1</b>	The Bid shall comprise two Parts, namely the Technical Part and the Financial Part. These two Parts shall be submitted simultaneously.
<b>ITB 11.2 (j)</b>	The Bidder shall submit the following additional documents in its Bid: <b>(j) Manufacturer’s authorization:</b> in the prescribed format. <b>(k) Subcontractor Agreements:</b> in the prescribed format.
<b>ITB 11.3 (d)</b>	The Bidder shall submit with its Bid the following additional documents: 1. All supporting documents and information needed for technical evaluation of the Bid in reference to the technical criteria and sub-criteria listed in Table 1 of Section III - Evaluation and Qualification. 2. Details of Satellite date procurement 3. Brochures of IoT (Technical Specification)
<b>ITB 12</b>	<b>Note for Bidders:</b> Bidders have to submit the bids on the e-procurement portal along with the relevant required documents. For this purpose, the bidders shall fill up online, the forms that are available for online filling on the e-portal. The rest of the forms shall be download by the bidders and filled up. The filled up pages shall then be scanned and uploaded on the e-procurement portal along with the scanned copies of the supporting documents.
<b>ITB 13.1</b>	Alternative Bids (Technical and Financial Parts) are not permitted.
<b>ITB 13.2</b>	Alternatives to the Time Schedule shall not be permitted.
<b>ITB 13.4</b>	Alternative technical solutions shall be permitted for the following parts of the Information System: Not Applicable
<b>ITB 15.2</b>	Prequalification has not been undertaken.
<b>ITB 16.2 (a)</b>	In addition to the topics described in ITB Clause 16.2 (a), the Preliminary Project Plan must address the following topics:  (i) The Project plan should be in MS Project and Plan should indicate all the detailed schedule and dependencies (ii) UAT and Test case preparation and all micro plans need to be added ion the project plan (iii) Project Organization and Management Sub-Plan, including management authorities, responsibilities, and contacts, as well as task, time and resource-bound schedules (in GANTT format); (iv) Implementation Sub-Plan; (v) Training Sub-Plan;

<b>ITB Reference</b>	<b>A. General</b>
	(vi) Testing and Quality Assurance Sub-Plan; (vii) Warranty Defect Repair and Technical Support Service Sub-Plan
<b>ITB 16.3</b>	Deleted.
<b>ITB 16.4</b>	<b>Note for Bidders:</b> Bidders to note that apart from other specified information and documents, bidders are also required to submit Manufacture’s Authorizations (and any Subcontractor Agreements) for major items of supply or services listed by the Purchaser in Section III, Evaluation and Qualification Criteria, which the Bidder intends to purchase or subcontract.
<b>ITB 17.2</b>	The Bidder <i>must not</i> bid Recurrent Cost Items
<b>ITB 17.2 (a)</b>	The <i>must not</i> bid for contracts of Recurrent Cost Items not included in the main Contract.
<b>ITB 17.5</b>	The Incoterms edition is: Incoterms 2010
<b>ITB 17.5 (a)</b>	Named place of destination is: <i>PMU , PoCRA , 30-B, Arcade, World Trade Center, Cuff Pared, Mumbai</i>
<b>ITB 17.5 (b)</b>	In ITB 17.5 (b) replace the words “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” with “including all customs duties, levies, fees and other taxes incurred until delivery of the Goods, but excluding GST.”
<b>ITB 17.6</b>	Named place of final destination (or Project site) is <i>PMU , PoCRA , World Trade Center, Cuff Pared, Mumbai</i>
<b>ITB 17.7</b>	In ITB 17.7 replace the word ‘VAT’ with ‘GST’ in the fourth line.
<b>ITB 17.8</b>	Deleted.
<b>ITB 17.9</b>	The prices quoted by the Bidder <i>shall not be</i> subject to adjustment during the performance of the Contract.
<b>ITB 17.10</b>	<p><b>Tax/duty exemptions</b></p> <p>Bidders may like to ascertain availability of tax/duty exemption benefits available in India to the contracts financed under World Bank loan/credits. They are solely responsible for obtaining such benefits which they have considered in their bid and in case of failure to receive such benefits for reasons whatsoever, the purchaser will not compensate the bidder.</p> <p>Where the bidder has quoted taking into account such benefits, it must give all information required for issue of necessary Certificates in terms of Government of India’s relevant notifications along with its bid as per form stipulated in Section IV.</p>

<b>ITB Reference</b>	<b>A. General</b>
	If the bidder has considered the tax/duty exemption in its bid, the bidder shall confirm and certify that the Purchaser will not be required to undertake any responsibilities of the Government of India Scheme or the said exemptions being available during the contract execution, except issuing the required certificate. The bids which do not conform to the above provisions or any condition by the bidder which makes the bid subject to availability of tax/ duty exemption or compensation on withdrawal of any variations to the said exemptions will be treated as non-responsive and liable to rejection”
<b>ITB 18.1</b>	The Bidder is required to quote in Indian Rs. the portion of the Bid price that corresponds to expenditures incurred in Indian Rs.
<b>ITB 19.1</b>	The Bid validity period shall be 180 days
<b>ITB 19.2</b>	In ITB 19.2 replace the words ‘twenty-eight days (28)’ with ‘forty-five days (45)’.
<b>ITB 19.3 (a)</b>	The Bid price shall be adjusted by the following factor(s): The local currency portion of the Contract price shall be adjusted by a factor reflecting local inflation during the period of extension, and the foreign currency portion of the Contract price shall be adjusted by a factor reflecting the international inflation (in the country of the foreign currency) during the period of extension.
<b>ITB 20.1</b>	Bid Security shall be required. The amount and currency of the Bid Security shall be INR 50,00,000/- or an equivalent amount in a freely convertible currency. Bid security shall not be in the form of a Bid Bond. A Bid-Securing Declaration shall not be required.
<b>ITB 20.3</b>	Replace the ITB 20.3 last paragraph with the following: “from a reputable source, and an eligible country. If an unconditional guarantee is issued by a non-banking institution located outside the Purchaser’s Country, the issuing institution shall have a correspondent financial institution located in the Purchaser’s Country to make it enforceable.”
<b>ITB 20.3 (c)</b>	Replace the existing ITB Sub-clause 20.3 (c) with the following: “20.3(c) a cashier’s or certified check or demand draft: or
<b>ITB 20.3 (d)</b>	Other types of acceptable securities: Demand Draft, Bank Guarantee by RBI authorized Bank for Indian Bidders. For International Bidders it shall be thru a correspondent Bank in the purchaser country. <i>(Please note that online cash transfer is not allowed as acceptable bid security.)</i>
<b>ITB 20.4</b>	The last sentence of ITB 20.4 is modified as “The bid security shall be valid for forty-five (45) days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 19.2.”

<b>ITB Reference</b>	<b>A. General</b>
<b>ITB 21.3</b>	<p>The bid shall be signed by a person duly authorized to sign on behalf of the Bidder. The authorization shall be uploaded along with the bid, and shall consist of a written confirmation in the form of:</p> <p>(a) ‘Legally valid Power of Attorney’ issued by the Board of Directors of the bidder to demonstrate the authority of the signatory to sign the Bid; or</p> <p>(b) ‘Power of Attorney signed by legally authorized signatories of all the members’ - in the case of Bid submitted by an existing or intended JV.</p>
<b>ITB 21.5</b>	<p>Replace ITB 21.5 with the following:</p> <p>“21.5 Corrections if any in the bid can be carried out by editing the information before electronic submission on e-procurement portal.”</p>
<b>D. Online Submission of Bids</b>	
<b>ITB 22 Preparation and Submission of Bids</b>	<p>Replace ITB 22 with the following:</p> <p>“22.1. Bids, both Technical and Financial Parts, shall be submitted online on the e-procurement system specified in BDS 7.1. Detailed guidelines for viewing bids and submission of online bids are given on the website. The Request for Bids under this Project is published on this website. Any citizen or prospective bidder can logon to this website and view the Request for Bids and can view the details of goods for which bids are invited. A prospective bidder can submit its bid online; however, the bidder is required to have enrolment/registration in the website, and should have valid Digital Signature Certificate (DSC) in the form of smart card/e-token obtained from any authorised certifying agency of Government of India for class I &amp; II as per requirement of <a href="http://www.mahatenders.gov.in">www.mahatenders.gov.in</a> . The bidder should register in the website using the relevant option available. Then the Digital Signature registration has to be done with the e-token, after logging into the website. The bidder can then login the website through the secured login by entering the password of the e-token &amp; the user id/ password chosen during registration. After getting the bid schedules, the Bidder should go through them carefully and submit the specified documents, along with the bid, otherwise the bid will be rejected.</p> <p>22.2. The completed bid, both Technical and Financial Parts, comprising of documents indicated in ITB 11 and 12, should be uploaded on the e-procurement portal specified in ITB 7.1, along with scanned copies of requisite certificates as are mentioned in different sections in the bidding document and scanned copy of the bid security or bid securing declaration as the case may be.</p> <p>22.3. All the documents are required to be signed digitally by the bidder. After electronic online bid submission, the system generates a unique bid identification number which is time stamped as per server time. This shall be treated as acknowledgement of bid submission.</p>

<b>ITB Reference</b>	<b>A. General</b>
	<p><b>22.4. Submission of Original Documents:</b> The bidders are required to separately submit (i) original payment documents towards the cost of bid document and registration on e-procurement website (if not previously registered) (as per RFB); and (ii) original bid security in approved form; and (c) original affidavit regarding correctness of information/documents furnished with the bid so as to reach the office <b>specified below</b>, before the deadline for submission of the Bid as specified in the BDS ITB 23.1, either by registered/speed post/courier or by hand, failing which the bids will be declared non-responsive and will not be opened. Hard copy of rest of the bid is not to be submitted.</p> <p style="text-align: center;">Attention: Project Director Address: PoCRA , 30-B, Arcade , World Trade Centre , Cuff Pared Mumbai PIN/Postal Code: 400005 Country: INDIA”.</p>
<b>ITB 23.1</b>	<p>Replace ITB 23.1 with the following: “23.1. Bids, both technical and financial parts, must be uploaded online no later than 10<sup>th</sup>, June 2019 by IST 15:00 HRS Physical, Email, Telex, Cable or Facsimile bids will be rejected.</p>
<b>ITB 24</b>	<p>Replace ITB 24.1 with the following: “24.1. The electronic bidding system would not allow any late submission of bids after due date &amp; time as per server time.”</p>
<b>ITB 25.1</b>	<p>Replace ITB 25.1 with the following: “25.1. A Bidders may modify its bid by using appropriate option for bid modification on the e-procurement portal, before the deadline for submission of bids. For this the bidder need not make any additional payment towards the cost of bid document. For bid modification and consequential re-submission, the bidder is not required to withdraw his bid submitted earlier. The last modified bid submitted by the bidder within the bid submission time shall be considered as the Bid. For this purpose, modification/withdrawal by other means will not be accepted. In online system of bid submission, the modification and consequential re-submission of bids is allowed any number of times. A bidder may withdraw its bid by using appropriate option for bid withdrawal, before the deadline for submission of bids, however, if the bid is withdrawn, re-submission of the bid is not allowed.</p>
<b>ITB 25.2</b>	<p>Replace ITB 25.2 with the following: “25.2. Bids requested to be withdrawn in accordance with ITB Sub-Clause 25.1 shall not be opened.”</p>
<b>E. Public Opening of Technical Parts of Bids</b>	
<b>ITB 26.1</b>	<p>Replace ITB 26.1 with the following: “26.1. The Purchaser shall publicly open Technical Parts of all bids received by the deadline at the date, time and place <b>specified below</b> in the presence of Bidders’ designated representatives and anyone who chooses to attend, and this could also be viewed by the</p>

<b>ITB Reference</b>	<b>A. General</b>
	<p>bidders online. The Financial Parts of the bids shall remain unopened in the e-procurement system, until the subsequent public opening, following the evaluation of the Technical Parts of the Bids. In all cases, original documents submitted as specified in ITB 22.4 shall be first scrutinized, and Bids that do not comply with the provisions of ITB 22.4 will be declared non-responsive and will not be opened. The bidder's names, Alternative Bids, the presence or absence of a Bid Security, if required; and such other details as the Purchaser may consider appropriate will be notified online by the Purchaser at the time of opening of Technical Part of the Bids.</p> <p>In the event of the specified date of the bid opening being declared a holiday for the Purchaser, the bids shall be opened at the appointed time and location on the next working day.</p> <p>The opening of Technical Parts of Bids shall take place at:  Address: PoCRA , 30-B , Arcade , World Trade Center , Mumbai , India  Date: 10<sup>th</sup> , <i>June 2019</i>  Time: IST 15:30 HRS</p>
<b>ITB 26.2</b>	<p>Replace ITB 26.2 with the following:  “26.2. The electronic summary of the opening of Technical Part of the Bids will be generated and uploaded online. The Purchaser will also prepare minutes of the Bid opening, including the information disclosed such as (a) the name of the Bidder; (b) presence or absence of a Bid Security and upload the same for viewing online.”</p>
<b>ITB 26.3</b>	<p>Replace ITB 26.3 with the following:  “26.3 Only Bids – Technical Parts, that are opened online at Bid opening shall be considered further for evaluation.”</p>
<b>ITB 26.4 to ITB 26.8</b>	Deleted.
<b>F. Evaluation, and Comparison of Bids – General Provisions</b>	
<b>ITB 30.3</b>	<p>The adjustment shall be based on the “<i>highest</i>” price of the item or component as quoted in other substantially responsive Bids. If the price of the item or component cannot be derived from the price of other substantially responsive Bids, the Purchaser shall use its best estimate. If the missing Goods and Services are a scored technical feature, the relevant score will be set at zero.</p>
<b>G. Evaluation of Technical Parts of Bids</b>	
<b>ITB 33.3</b>	Deleted
<b>H. Public Opening of Financial Parts of Bids</b>	
<b>ITB 34</b>	Replace ITB 34.1(b) with the following:

<b>ITB Reference</b>	<b>A. General</b>
	<p>“34.1(b) their Financial Part of the Bid shall not be opened; and”</p> <p>Replace ITB 34.2(b) with the following:  “34.2(b) their Financial Part of Bid will be opened at the public opening of Financial Parts; and”</p> <p>Replace ITB 34.3 with the following:  “34.3 The opening date should allow Bidders sufficient time to make arrangements for attending the opening. The Financial Part of the Bids shall be opened publicly in the presence of Bidders’ designated representatives and anyone who chooses to attend, and this could also be viewed by the bidders online. The bidder’s names, the Bid prices, the total amount of each bid, per lot (contract) if applicable, including any discounts, Alternative Bid – Financial Part if permitted, and such other details as the Purchaser may consider appropriate will be notified online by the Purchaser at the time of opening of Financial Part of the Bids.  In the event of the specified date of bid opening being declared a holiday for the Purchaser, the bids will be opened at the appointed time and location on the next working day.”</p> <p>Replace ITB 34.4 with the following:  “34.4 The electronic summary of the opening of Financial Part of the Bids will be generated and uploaded online. The Purchaser will also prepare minutes of the Bid opening, including the information disclosed and upload the same for viewing online. Only Financial Part of Bids, Financial Part of Alternative Bids if permitted, and discounts that are opened and read out at opening of Financial Part of the Bids shall be considered further for evaluation.”</p> <p>ITB 34.5 Deleted.  ITB 34.6 Deleted.  ITB 34.7 Deleted.  ITB 34.8 Deleted.</p>
<b>ITB 34.2(c)</b>	<p>Following the completion of the evaluation of the Technical Parts of the Bids, the Purchaser will notify all Bidders of the location, date and time of the public opening of Financial Parts.</p> <p>The Purchaser shall publish a notice of the public opening of the Financial Parts on its website.</p>
<b>I. Evaluation of Financial Parts of Bids</b>	
<b>ITB 35.1</b>	The Purchaser’s evaluation of responsive Bids <b>“will take</b> into account technical factors, in addition to cost factors as specified in Section III, Bid Evaluation and Qualification Criteria.
<b>ITB 35.1</b>	Rated criterion will be used in evaluation as per formula stipulated in Para 3.2 of Section III.

ITB Reference	A. General
	<p>The weight 'X' for the Price in the said formula is 70% (or 0.7) and the weight for the Technical features is 30% (or 0.3).</p> <p>Technical Criteria and sub-criteria which will be taken into account while applying the rated criteria are identified and stipulated in paragraph 1, Table 1, and paragraphs 1.1 to 1.4 of Section III - Evaluation and Qualification.</p>
ITB 35.3(f)	Deleted
ITB 35.5	Bids for Subsystems, lots, or slices of the overall Information System will not be accepted Discount that are conditional on the award of more than one Subsystem, lot, or slice may be offered in Bids and such discounts <i>shall not</i> be considered in the price evaluation.
ITB 37.1	<p>The currency(ies) of the Bid shall be converted into a single currency as follows: Indian Rs.</p> <p>The currency that shall be used for Bid evaluation and comparison purposes to convert all Bid prices expressed in various currencies into a single currency is: Indian Rs.</p> <p>The source of exchange rate shall be: BC selling market exchange rates established by the State Bank of India.</p> <p>The date for the exchange rate shall be: the deadline for submission of bids.</p>
ITB 42.1	In ITB 42.1 replace the words 'all bids submitted' with 'all documents submitted' in the second line.
ITB 43	The Standstill Period commences the day after the date the Purchaser has transmitted to all Bidders that submitted Bids, the Notification of its Intention to Award the Contract to the successful Bidder. However, where a Bidder has previously received notification, in accordance with ITB 34.1, that its Technical Part of Bid failed to meet the requirements of the bidding document, the Bidder will not receive a Notification of Intention to Award the Contract.
<b>F. AWARD OF CONTRACT</b>	
ITB 45	The award will be made on the basis of <i>rated criteria</i> pursuant to ITB 35.1 in accordance with Section III, Evaluation and Qualification Criteria.
ITB 46	<p>The maximum percentage by which quantities may be increased is: <b>10%</b></p> <p>The maximum percentage by which quantities may be decreased is: <b>10%</b></p>
ITB 47.3	<p>Replace ITB 47.3 with the following:</p> <p>“The Contract Award Notice shall be published on the e-portal website- <a href="http://mahatenders.gov.in">http://mahatenders.gov.in</a> with free access . The Purchaser shall also publish the Contract Award Notice in UNDB online.”</p>



<b>ITB Reference</b>	<b>A. General</b>
<b>ITB 49.1</b>	The successful Bidder <i>shall not</i> submit the Beneficial Ownership Disclosure Form.
<b>ITB 50</b>	<p>Replace ITB 50.1 with the following:</p> <p>“50.1 Within twenty-eight (28) days of the receipt of the Letter of Acceptance from the Purchaser, the successful Bidder shall furnish the performance security in accordance with the General Conditions, subject to ITB 41.2 (b), using for that purpose the Performance Security Form included in Section X, Contract Forms, or another form acceptable to the Purchaser. A foreign institution providing a Performance Security shall have a correspondent financial institution located in the Purchaser’s Country.”</p>
<b>ITB 51</b>	<p>The proposed Adjudicator is: Prof Jagarlapudi Adinarayana</p> <p>His resume is attached as Annexure – I at the end of the RFB.</p> <p>The proposed fee per day of effective hearing is INR 15,000/- plus actual expenditure towards travel, transportation, lodging and boarding which is determined reasonable.</p>
<b>ITB 52.1</b>	<p>The procedures for making a Procurement-related Complaint are detailed in the “<a href="#">Procurement Regulations for IPF Borrowers</a> (Annex III).” If a Bidder wishes to make a Procurement-related Complaint, the Bidder should submit its complaint following these procedures, in writing (by the quickest means available, that is either by email or fax), to:</p> <p><b>For the attention:</b> <i>Project Director</i></p> <p><b>Purchaser:</b> <i>Project on Climate Resilient Agriculture</i></p> <p><b>Email address:</b> <i>procurement.pmu@mahapocra.gov.in</i></p> <p>In summary, a Procurement-related Complaint may challenge any of the following:</p> <ol style="list-style-type: none"> <li>1. the terms of the Bidding Documents;</li> <li>2. the Purchaser’s decision to exclude a Bidder from the procurement process prior to the award of contract; and</li> <li>3. the Purchaser’s decision to award the contract.</li> </ol>

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

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

In line with the two-envelope bidding process, this section includes Evaluation and Qualification Criteria:

- (i) Technical Part; and**
- (ii) Financial Part.**

#### **A. Award Criteria**

The Purchaser shall use the criteria and methodologies listed in this Section to determine the Most Advantageous Bid. The determination of the Most Advantageous Bid will be made in accordance with the applicable option as defined in **the BDS ITB 45**. Accordingly, the determination of the Most Advantageous Bid will be made as under:

The Bidder that meets the qualification criteria and whose Bid:

- (i) is substantially responsive; and
- (ii) is the best evaluated Bid (i.e. the Bid with the highest combined technical/quality/price score)

## 1. Technical Part

**Table 1 – Technical Criteria (Rated Criteria) (Ref: BDS ITB 45)**

Bid will be technically evaluated as per the below mentioned rated criteria:

#	Evaluation Criteria	Total Marks	Over all cut-off
1	Bidder's Experience	35	
2	Proposed Solution	15	
3	Approach & Methodology	35	
4	Resource Planning, Project Governance & Key personnel proposed	15	
<b>Total</b>		<b>100</b>	<b>70</b>

### 1.1 Bidder's Experience

#	Citation	Citation Details	Documentary Evidence	Marks Allotted
1.	Experience in development and maintenance of digital platforms or large integrated platform based projects	<p>Experience in development &amp; maintenance of digital platforms or large integrated platform based projects in last ten (10) years from the date of submission of bid. Value of project to be at least of INR 15 crores.</p> <p><i>3 citations (at least 1 should be successfully completed) = 5 marks,</i></p> <p><i>2 citations (at least 1 should be successfully completed) = 2 marks,</i></p> <p><i>1 citation (successfully completed) = 1 mark</i></p>	<p>Copy of work order + Completion Certificates from the client;</p> <p>OR</p> <p>Work Order + Self Certificate of Completion (Certified by CS/independent auditor of the bidding entity) mentioning the work done; OR</p> <p>Work Order + Phase Completion Certificate from client or client certificate (project should be well under implementation)</p>	8

#	Citation	Citation Details	Documentary Evidence	Marks Allotted
		3 additional marks if one of the above citations is in agriculture/Climate resilient and watershed management project		
2	Experience in System Integration projects – to include (a) application development, (b) deployment, (c) Workflow management	<p>Experience in System Integration projects (including Infrastructure procurement) during the last ten years from the date of submission of bid. Value of project to be at least of value INR 15 crores</p> <p><i>5 citations (at least 1 should be successfully completed) = 5 marks,</i></p> <p><i>3 citations (at least 1 should be successfully completed) = 3 marks,</i></p> <p><i>1 citation (successfully completed) = 1 mark</i></p> <p><i>2 additional marks if project implemented in agriculture domain under state or central government</i></p>	<p>Copy of work order + Completion Certificates from the client;</p> <p>OR</p> <p>Work Order + Self Certificate of Completion (Certified by CS/independent auditor of the bidding entity) mentioning the work done; OR</p> <p>Work Order + Phase Completion Certificate from client or client certificate (project should be well under implementation)</p>	7
3	Experience in Application development in Agriculture sector /climate resilient and watershed management projects	<p>Experience of at least one project in Agriculture/ Climate resilient and watershed management projects</p> <p><i>3 citations (at least 1 should be successfully completed) = 6 marks,</i></p> <p><i>2 citations (at least 1 should be successfully completed) = 4 marks,</i></p> <p><i>1 citation (successfully completed) = 1 mark</i></p>	<p>Copy of work order + Completion Certificates from the client;</p> <p>OR</p> <p>Work Order + Self Certificate of Completion (Certified by CS/independent auditor of the bidding entity) mentioning the work done; OR</p> <p>Work Order + Phase Completion Certificate from client or client certificate (project should be well under implementation)</p>	6

#	Citation	Citation Details	Documentary Evidence	Marks Allotted
4	Experience in handling agriculture / climate resilient and watershed management project based on its value	<p>Experience of handling and delivering high value project in the agriculture / Climate resilient domain and watershed management projects</p> <p>Project cost more than Rs. 30 Cr = 4 marks            Project cost upto Rs.15 Cr = 3 marks            Project cost upto Rs. 5 Cr = 2 marks            Project cost upto Rs. 2 Cr = 1 mark</p>	<p>Copy of work order + Completion Certificates from the client;</p> <p>OR</p> <p>Work Order + Self Certificate of Completion (Certified by CS/independent auditor of the bidding entity) mentioning the work done; OR</p> <p>Work Order + Phase Completion Certificate from client or client certificate (project should be well under implementation)</p>	4
5	Use case submission in agriculture / climate resilient and watershed management project	<p>Use case on agriculture / climate resilient and watershed management project</p> <p>Use Case submission <math>\geq 1</math> and <math>\leq 3</math> - 5 marks            Use Case submission <math>&gt; 3</math> and <math>\leq 5</math> - 7 marks            Use Case submission <math>&gt; 5</math> - 10 marks</p>	<p>Bidder has to provide the detailed documentation on the solution architecture, algorithm used, technology landscape, outcome impacts in line with the details required in 2.1 below along with the details of the client and project implemented</p>	10

### 1.1.1 Use Case Submission

- The bidder needs to provide use case along with the presentation.
- The bidder must have used any of technologies mentioned in RFB on an actual project and submit a detailed note and report along with technical bid.
- The bidder needs to provide the detailed on the solution architecture, algorithms used, technology landscape, outcome, and impacts.
- The bidder needs to provide details of Project implemented along with client's details
- Bidder should provide use case based on any one advisory and one report at village level as mentioned in below table
- Use case will also be evaluated on the user experience to end users on mobile application or web/ responsive design, Experience on implementation of Devops tools in the development environment, API based integration between different modules, and Use of other non-key technologies (i.e. Satellite data, AI/ML, etc.), user interface & (NoSQL, Control delivery, online /offline data sync.).

<b>Sample Reports / Advisory to Farmers and Department</b>		
<b>Sr. No.</b>	<b>Advisory to Farmers at Village level (Weekly)</b>	<b>Reports to Department (Weekly)</b>
1	When to Sow (Sowing Date by crop)	Sown Area
2	Crop Protection measures	Damage / Disaster Area
3	What to Sow at village level	Crop Health
4	Crop Surveillance	Yield Estimate and Yield Modelling
5	Early disaster warning	Crop Mapping and Crop Acreages
6	Crop Health Management	CCE Application

## 1.2 Proposed Solution

#	Citation	Areas to be Demonstrated	Documentary Evidence	Marks Allotted
1	Solution/ Product Experience	<p>Whether the proposed Solution (technologies as proposed in this bid) is deployed and operational in an existing project.</p> <p>Bidder will be evaluated as per their prior experience of deploying and maintaining of technologies proposed for this project.</p>	<p>Copy of work order + Completion Certificates from the client; OR Work Order + Self Certificate of Completion (Certified by CS/independent auditor of the bidding entity)</p>	5
2	Overall Solution & Deployment Architecture	<p>Functional architecture, Application architecture, Integration architecture, &amp; Infrastructure deployment architecture proposed solution covering at minimum the below key aspects:</p> <ul style="list-style-type: none"> <li>• Modularity of the system</li> <li>• Scalability to handle future load by adding additional compute and no constraints on the application</li> <li>• Suitability of Tools &amp;</li> <li>• Technologies proposed including capacity to handle large volumes as envisaged by PoCRA System</li> <li>• Use of Open standards and open source products</li> <li>• How the system is compliance to architecture principles as required for PoCRA System</li> <li>• Approach to develop the API based system</li> <li>• Managing the API eco system</li> <li>• Risk and mitigation</li> <li>• Plan to handle multiple stakeholders</li> </ul>	Approach and Methodology	10

### 1.3 Approach & Methodology

#	Criteria	Criteria Details	Marks Allotted
1.	Understanding of Business and Scope of work and all aspect of the Project	Demonstrated level of understanding of the PoCRA business processes, the project purpose and scope of work. <i>Average 5</i> <i>Good 15</i> <i>Very good 25</i> <i>Excellent 35</i>	35

### 1.4 Resource Deployment Plan

#	Criteria	Criteria Details	Marks Allotted
1	Resource Deployment Plan & Governance Structure	Bidder would be evaluated for Resource Deployment Plan & Governance Structure <i>Good : 1</i> <i>Very Good : 2</i> <i>Excellent : 3</i>	3
2	Program Manager	Should fulfill basic minimum qualification as mentioned in RFB in terms of <ul style="list-style-type: none"> <li>▪ Qualification &amp; Certification</li> <li>▪ Total experience</li> </ul> Experience in similar assignments	2
3	Agriculture domain expert	Should fulfill basic minimum qualification as mentioned in RFB in terms of <ul style="list-style-type: none"> <li>▪ Qualification &amp; Certification</li> <li>▪ Total experience</li> </ul> Experience in similar assignments	2
4	Solution Architect	Should fulfill basic minimum qualification as mentioned in RFB in terms of <ul style="list-style-type: none"> <li>▪ Qualification &amp; Certification</li> <li>▪ Total experience</li> </ul> Experience in similar assignments	2
5	GIS Expert	Should fulfill basic minimum qualification as mentioned in RFB in terms of <ul style="list-style-type: none"> <li>▪ Qualification &amp; Certification</li> </ul>	2



#	Criteria	Criteria Details	Marks Allotted
		<ul style="list-style-type: none"> <li>▪ Total experience</li> </ul> Experience in similar assignments	
6	Satellite data & imaging services	Should fulfill basic minimum qualification as mentioned in RFB in terms of <ul style="list-style-type: none"> <li>▪ Qualification &amp; Certification</li> <li>▪ Total experience</li> </ul> Experience in similar assignments	2
7	Weather Advisory services	Should fulfill basic minimum qualification as mentioned in RFB in terms of <ul style="list-style-type: none"> <li>▪ Qualification &amp; Certification</li> <li>▪ Total experience</li> </ul> Experience in similar assignments	2

Following table specifies the minimum qualification required for Key Positions identified for this project. Minimum 8 resources to be deployed full time for the complete project period (Five years from Go live) at PoCRA NOC for successful implementation and monitoring of the project

#	Position	Minimum Qualification
1	Program Manager	Education: Full Time MBA / MCA / M. Tech / Equivalent & B. Tech/B.E <ul style="list-style-type: none"> <li>▪ Total Experience: Should possess at least 12 years of experience in IT.</li> <li>▪ Should have more than 8 years of experience of handling such large projects as a project/program manager</li> <li>▪ Should have led a team of at least 25 resources</li> <li>▪ Should have led at least one such project end to end i.e. from development to deployment to O&amp;M phase</li> <li>▪ Previous experience of handling large e-governance projects would be an added advantage</li> </ul>
2	Agriculture domain expert	<ul style="list-style-type: none"> <li>▪ Education: Full time MBA or Equivalent / Graduate or above (i.e. PG or Doctorate) in Agriculture or allied</li> <li>▪ Total Experience: At least 8 years in the field of agriculture</li> <li>▪ Preference is given for person having work experience in the Government sector.</li> <li>▪ Should have experience of executing more than 1 large IT project in agriculture domain</li> </ul>
3	Solution Architect	<ul style="list-style-type: none"> <li>▪ Education: Full time MCA/M. Tech/B. Tech/B.E.</li> <li>▪ Total Experience: At least 8 years in IT domain</li> <li>▪ Should have experience of more than 5 years as Solution Architect in large projects of similar nature</li> </ul>

#	Position	Minimum Qualification
		<ul style="list-style-type: none"> <li>▪ Should have architected at least three large scale projects</li> </ul>
4	GIS Expert	<ul style="list-style-type: none"> <li>▪ Education: Full time course in GIS technology, MCA/M. Tech/B. Tech/B.E.</li> <li>▪ Total Experience: At least 8 years in IT domain</li> <li>▪ Should have experience of more than 5 years as GIS expert in large projects of similar nature</li> <li>▪ Should have worked on at least three large scale GIS projects</li> </ul>
5	Satellite data & imaging services	<ul style="list-style-type: none"> <li>▪ Education: Full time MCA/M. Tech/B. Tech/B.E. and course in remote sensing and digital image processing of Satellite data</li> <li>▪ Total Experience: At least 8 years</li> <li>▪ Should have experience of more than 5 years in satellite imaging domain in large projects of similar nature</li> <li>▪ Should have worked in at least three large scale projects</li> </ul>
6	Weather Advisory services	<ul style="list-style-type: none"> <li>▪ Education: Full time MCA/M. Tech/B. Tech/B.E and course in climate science or metrology</li> <li>▪ Total Experience: At least 8 years</li> <li>▪ Should have experience of more than 5 years in Weather advisory domain in large projects of similar nature</li> <li>▪ Should have worked in at least three large scale projects</li> </ul>
7	Other Key Personnel	<ul style="list-style-type: none"> <li>▪ Operations and Maintenance Team coordinator</li> <li>▪ Training Coordinator</li> <li>▪ Software Team Lead</li> </ul>

## 2. Qualification

Factor	2.1 ELIGIBILITY					
Sub-Factor	Criteria					Documentation Required
	Requirement	Single Entity	Bidder			
			Joint Venture (existing or intended)			
			All members combined	Each member	At least one member	
2.1.1 <u>Nationality</u>	Nationality in accordance with ITB 4.4.	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Form ELI –2.1.1 and 2.1.2, with attachments
2.1.2 <u>Conflict of Interest</u>	No- conflicts of interests as described in ITB 4.2.	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Letter of Bid
2.1.3 <u>Bank Ineligibility</u>	Not having been declared ineligible by the Bank as described in ITB 4.5.	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Letter of Bid
2.1.4 <u>State owned Entity of the Borrower country</u>	Compliance with conditions of ITB 4.6	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Form ELI –2.1.1 and 2.1.2, with attachments

<b>Factor</b>	<b>2.1 ELIGIBILITY</b>					
<b>Sub-Factor</b>	Criteria					<b>Documentation Required</b>
	<b>Requirement</b>	<b>Bidder</b>				
		<b>Single Entity</b>	<b>Joint Venture (existing or intended)</b>			
<b>All members combined</b>			<b>Each member</b>	<b>At least one member</b>		
2.1.5 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 Bidder's country, or by an act of compliance with UN Security Council resolution, both in accordance with ITB 4.8	Must meet requirement	Must meet requirement	Must meet requirement	N / A	Letter of Bid
<b>Factor</b>	<b>2.2 HISTORICAL CONTRACT NON-PERFORMANCE</b>					
<b>Sub-Factor</b>	Criteria					<b>Documentation Required</b>
	<b>Requirement</b>	<b>Bidder</b>				
		<b>Single Entity</b>	<b>Joint Venture (existing or intended)</b>			
<b>All members combined</b>			<b>Each member</b>	<b>At least one member</b>		

2.2.1 History of non-performing contracts	Non-performance of a contract <sup>1</sup> did not occur as a result of Bidder's default since 1 <sup>st</sup> January 2018	Must meet requirement by itself or as member to past or existing JV	N / A	Must meet requirement <sup>2</sup>	N / A	Form CON - 2
2.2.2 Suspension	Not under suspension based on execution of a Bid Securing Declaration or Proposal Securing Declaration pursuant to ITB 4.7 and ITB 20.10	Must meet requirement	N / A	Must meet requirement	N / A	Letter of Bid
2.2.3 Pending Litigation	Bidder'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 Bidder.	Must meet requirement by itself or as member to past or existing JV	N / A	Must meet requirement	N / A	Form CON – 2
2.2.4 Litigation History	No consistent history of court/arbitral award decisions against the Applicant since 1st January 2018	Must meet requirement	Must meet requirement	Must meet requirement	N/A	Form CON – 2

<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 Bidder as JV member.

Factor	2.3 FINANCIAL SITUATION					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture (existing or intended)			
All members combined	Each member		At least one member			
<b>2.3.1 Historical Financial Performance</b>	Submission of audited balance sheets for the last three [3] years to demonstrate the current soundness of the Bidders financial position and its prospective long term profitability.	Must meet requirement	N / A	Must meet requirement	N / A	Form FIN – 2.3.1 with attachments
<b>2.3.2 Average Annual Turnover</b>	Annual turnover of at least Rs. 200 Crores from IT Services (Design and development of digital platform, software application, mobile application development, cloud solution deployment supply of hardware, development of software applications, system integration, providing networking support, operational and maintenance services for IT infrastructure) ) in any of the last three audited financial years (FY 16, FY 17 and FY 18)	Must meet requirement	All member combined must meet the requirement, subject to the condition that the Lead member should meet at least 75% of the specified annual turnover, and the other member/ members taken together, shall meet 25% of the specified annual turnover.	Must meet requirement, as specified in the preceding column.	N/A	Form FIN – 2.3.2

<b>2.3.3 Financial Resources</b>	<p>The Bidder 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: INR 5 Cr or equivalent amount in US\$</p>	<p>Must meet requirement</p>	<p>Must meet requirement</p>	<p>N/A</p>	<p>N/A</p>	<p>Form FIN – 2.3.3</p>
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Factor	2.4 EXPERIENCE					
Sub-Factor	Criteria					Document ation Required
	Requirement	Bidder				
		Single Entity	Joint Venture (existing or intended)			
			All members combined	Each member	At least one member	
<b>2.4.1 General Experience</b>	<p>Experience in Information Systems Design, and/or Supply and/or Installation contracts in the role of prime contractor, JV member, subcontractor, or management contractor for at least the last 3years, starting 1st January 2016.</p>	<p>Must meet requirement</p>	<p>N / A</p>	<p>Must Meet Requirement</p>	<p>N / A</p>	<p>Form EXP-2.4.1</p>
<b>2.4.2 Specific Experience</b>	<p>The Bidder should have experience of at least THREE digital platform deployment Projects. The Bidder's scope of work in each of the 3 Projects should include following</p>	<p>Must meet requirement</p>	<p>Must meet requirements for all characteristics</p>	<p>Must Meet requirement for at</p>	<p>N / A</p>	<p>Form EXP 2.4.2</p>

<b>Factor</b>	<b>2.4 EXPERIENCE</b>					
<b>Sub-Factor</b>	<b>Criteria</b>					<b>Document ation Required</b>
	<b>Requirement</b>	<b>Bidder</b>				
		<b>Single Entity</b>	<b>Joint Venture (existing or intended)</b>			
<b>All members combined</b>			<b>Each member</b>	<b>At least one member</b>		
	components: a) Design development and maintenance of digital platform b) Hosting and development of Cloud solutions c) Mobile application development and maintenance d) Big Data & Analytics e) Hardware procurement, deployment, f) Data Centre or DR Site setup or Server(s) deployment and commissioning, operation and maintenance of related infrastructure			least one of the components listed in Column 2.		



Factor	2.5 OTHERS					
Sub-Factor	Criteria					Documentation Required
	Requirement	Bidder				
		Single Entity	Joint Venture (existing or intended)			
All members combined			Each member	At least one member		
<b>2.5.1 Certificate of Capability Maturity Model (CMM) level 5</b>	Certificate of Capability Maturity Model (CMM) at Level 5	CMM Level 5	Must meet requirement		CMM Level 5	Certificate displaying Capability Maturity Model (CMM) at level 5 from the issuing authority

### 3. Financial Part

#### 3.1 Financial Evaluation

**Evaluated Bid Price (C):  $C1 + C2 + C3 + C4 + (C5 \times 200) + (C6 \times 1,000)$**

**Please Note:**

“C1” =Development, Implementation and Configuration of Digital platform and PoCRA applications

“C2” =Installation and Maintenance of IoT cost

“C3” =Satellite Image cost

“C4” =Cloud Cost

"C5" = Comprises of: Man-month Rate for Software Development and Modification (M)

- 200 Man-month is only for the purpose of evaluation of commercial bid. It is not committed by the Purchaser.
- Price Schedule requires the Bidder to quote Man Month rates for use only in case a change request, The same will be paid as per the process defined in clause 4.9 Change Management Process & Evaluation Framework

"C6" = Satellite / UAV data preprocessing cost for 100 Sq KM for one composite image

- 1,00,000 Sq. KM area and quoted price of 1 Composite Image are being used only for the purpose of evaluation of commercial bid. However, these is no commitment on the part of the Purchaser.
- This component would be utilized through change management process defined in clause 4.9 Change Management Process & Evaluation Framework

#### 3.2 Combined Evaluation

The Purchaser will evaluate and compare the Bids that have been determined to be substantially responsive, pursuant to ITB 32.

The Purchaser’s evaluation of responsive Bids will take into account technical factors, in addition to cost factors.

An Evaluated Bid Score (B) will be calculated for each substantially responsive Bid using the following formula:

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

where

$C$  = Evaluated Bid Price

$C_{low}$  = the lowest of all Evaluated Bid Prices among responsive Bids

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

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

$X$  = weight for the Price as specified in the BDS

The Bid with the highest evaluated Bid Score (B) among responsive Bids shall be the Most Advantageous Bid provided the Bidder was found to be qualified to perform the Contract in accordance with ITB 33.



**SECTION IV - BIDDING FORMS**

## Letter of Bid – Technical Part

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

*Place this Letter of Bid in the first envelope “TECHNICAL PART”.*

*The Bidder must prepare this Letter of Bid on stationery with its letterhead clearly showing the Bidder’s complete name and business address.*

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

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

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

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

**To: Project Director, Project on Climate Resilient Agriculture (PoCRA)**

We, the undersigned, hereby submit our Bid, in two parts, namely:

- (a) the Technical Part, and
- (b) the Financial Part

In submitting our Bid, we make the following declarations:

- (a) **No reservations:** We have examined and have no reservations to the bidding document, including Addenda issued in accordance with Instructions to Bidders (ITB 8);
- (b) **Eligibility:** We meet the eligibility requirements and have no conflict of interest in accordance with ITB 4;
- (c) **Bid-Securing Declaration:** We have not been suspended nor declared ineligible by the Purchaser based on execution of a Bid-Securing Declaration or Proposal-Securing Declaration in the Purchaser’s Country in accordance with ITB 4.7;
- (d) **Conformity:** We offer to provide design, supply and installation services in conformity with the bidding document of the following: *[insert a brief description of the IS Design, Supply and Installation Services]*;
- (e) **Bid Validity Period:** Our Bid shall be valid for the period specified in BDS ITB 19.1 (as amended if applicable) from the date fixed for the Bid submission deadline (specified in BDS ITB 23.1 (as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) **Performance Security:** If our Bid is accepted, we commit to obtain a Performance Security in accordance with the bidding document;

- (g) **One Bid Per Bidder:** We are not submitting any other Bid(s) as an individual Bidder, and we are not participating in any other Bid(s) as a Joint Venture member, and meet the requirements of ITB 4.3, other than alternative Bids submitted in accordance with ITB 13;
- (h) **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;
- (i) **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 ITB 4.6];*
- (j) **Binding Contract:** We understand that this Bid, 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;
- (k) **Not Bound to Accept:** We understand that you are not bound to accept the lowest evaluated cost Bid, the Most Advantageous Bid or any other Bid that you may receive;
- (l) **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; and
- (m) **Adjudicator:** We accept the appointment of *[insert name proposed in Bid Data Sheet]* as the Adjudicator.

***[or]***

We do not accept the appointment of *[insert name proposed in Bid Data Sheet]* as the Adjudicator and propose instead that *[insert name]* be appointed<sup>1</sup> as Adjudicator, whose daily fees and biographical data are attached.

**Name of the Bidder:** *\*[insert complete name of person signing the Bid]*

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<sup>1</sup> In case appointment of Adjudicator was proposed from the list provided by an Institution in ITB 51, the replacement should also be proposed from the list of same institution.

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

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

**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 Bid submitted by joint venture specify the name of the Joint Venture as Bidder

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



**Appendix to Technical Part: Technical Proposal**

**Form ELI 2.1.1**  
**Bidder Information Form**

*[The Bidder 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 Bid submission]*

RFB No.: *[insert number of Bidding process]*

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

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

1. Bidder's Name <i>[insert Bidder'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. Bidder's actual or intended country of registration: <i>[insert actual or intended country of registration]</i>
4. Bidder's year of registration: <i>[insert Bidder's year of registration]</i>
5. Bidder's Address in country of registration: <i>[insert Bidder's legal address in country of registration]</i>
6. Bidder's Authorized Representative Information  Name: <i>[insert Authorized Representative's name]</i> Address: <i>[insert Authorized Representative's Address]</i> Telephone/Fax numbers: <i>[insert Authorized Representative's telephone/fax numbers]</i> 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>  <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 ITB 4.4. <input type="checkbox"/> In case of JV, letter of intent to form JV or JV agreement, in accordance with ITB 4.1. <input type="checkbox"/> In case of state-owned enterprise or institution, in accordance with ITB 4.6 documents establishing: <ul style="list-style-type: none"> <li>• Legal and financial autonomy</li> <li>• Operation under commercial law</li> <li>• Establishing that the Bidder is not under the supervision of the Purchaser</li> </ul>
8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. <i>[If required under BDS ITB 49.1, the successful Bidder shall provide additional information on beneficial ownership, using the Beneficial Ownership Disclosure Form.]</i>

## Form ELI 2.1.2 Bidder's JV Members Information Form

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

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

RFB No.: *[insert number of Bidding process]*

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

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

1. Bidder's Name: <i>[insert Bidder's legal name]</i>
2. Bidder's JV Member's name: <i>[insert JV's Member legal name]</i>
3. Bidder's JV Member's country of registration: <i>[insert JV's Member country of registration]</i>
4. Bidder's JV Member's year of registration: <i>[insert JV's Member year of registration]</i>
5. Bidder's JV Member's legal address in country of registration: <i>[insert JV's Member legal address in country of registration]</i>
6. Bidder's JV Member's authorized representative information Name: <i>[insert name of JV's Member authorized representative]</i> Address: <i>[insert address of JV's Member authorized representative]</i> Telephone/Fax numbers: <i>[insert telephone/fax numbers of JV's Member authorized representative]</i> Email Address: <i>[insert email address of JV's Member authorized representative]</i>
7. Attached are copies of original documents of <i>[check the box(es) of the attached original documents]</i>  <input type="checkbox"/> Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above, in accordance with ITB 4.4.  <input type="checkbox"/> 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 ITB 4.6.
8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership. <i>[If required under BDS ITB 49.1, the successful Bidder shall provide additional information on beneficial ownership for each JV member using the Beneficial Ownership Disclosure Form.]</i>

**DETAILS OF PARTICIPATION IN THE JOINT VENTURE**

<b>PARTICIPATION DETAILS</b>	<b>FIRM 'A' (Lead Member)</b>	<b>FIRM 'B'</b>	<b>FIRM 'C'</b>
Financial			
Name of the Banker(s)			
Planning			
Supply of information systems Equipment			
Software/ development/ /integration/warranty/post warranty services etc.			
Key Personnel			
Execution of installation of the information systems (Give details on contribution of each member and the controlling member)			

The Joint Venture should indicate the details of participation as above.

**Form CON – 2**

**Historical Contract Non-Performance and Pending Litigation**

Bidder’s Legal Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV member Legal Name: \_\_\_\_\_

RFB No.: \_\_\_\_\_

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

Non-Performing Contracts in accordance with Section III, Evaluation and Qualification Criteria			
Contract non-performance did not occur during the stipulated period, in accordance with Sub- Factor 2.2.1 of Section III, Evaluation Criteria			
Pending Litigation, in accordance with Section III, Evaluation and Qualification Criteria			
No pending litigation in accordance with Sub-Factor 2.2.3 of Section III, Evaluation Criteria			
Pending litigation in accordance with Sub-Factor 2.2.3 of Section III, Evaluation Criteria, as indicated below			
Year	Outcome as Percent of Total Assets	Contract Identification	Total Contract Amount (current value, US\$ equivalent)
_____	_____	Contract Identification: Name of Purchaser: Address of Purchaser: Matter in dispute:	_____
_____	_____	Contract Identification: Name of Purchaser: Address of Purchaser: Matter in dispute:	_____

### Form EXP 2.4.1

#### Experience - General Experience

*[The following table shall be filled in for the Bidder and for each member of a Joint Venture]*

Bidder’s Legal Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member Legal Name: \_\_\_\_\_

RFB No.: \_\_\_\_\_

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

Starting Month / Year	Ending Month / Year	Years*	Contract Identification	Role of Bidder
_____	_____		Contract name: Brief Description of the Information System performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Information System performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Information System performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Information System performed by the Bidder: Name of Purchaser: Address:	_____
_____	_____		Contract name: Brief Description of the Information System performed by the Bidder: Name of Purchaser: Address:	_____

<b>Starting Month / Year</b>	<b>Ending Month / Year</b>	<b>Years*</b>	<b>Contract Identification</b>	<b>Role of Bidder</b>
_____	_____		Contract name: Brief Description of the Information System performed by the Bidder: Name of Purchaser: Address:	_____

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

**Form EXP – 2.4.2  
Specific Experience**

Bidder's Legal Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member Legal Name: \_\_\_\_\_

RFB No.: \_\_\_\_\_

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

<b>Similar Contract Number: ___ of ___ required.</b>	<b>Information</b>		
Contract Identification	_____		
Award date Completion date	_____ _____		
Role in Contract	<input type="checkbox"/> Prime Supplier	<input type="checkbox"/> Management Contractor	<input type="checkbox"/> Subcontractor
Total contract amount	_____		US\$ _____
If member in a JV or subcontractor, specify participation of total contract amount	_____ %	_____	US\$ _____
Purchaser's Name:	_____		
Address:  Telephone/fax number: E-mail:	_____ _____ _____ _____		



**Form EXP – 2.4.2 (cont.)**  
**Specific Experience (cont.)**

Bidder's Legal Name: \_\_\_\_\_

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

JV Member Legal Name: \_\_\_\_\_

<b>Similar Contract No. __[insert specific number] of [total number of contracts] __ required</b>	<b>Information</b>
Description of the similarity in accordance with Sub-Factor 2.4.2 of Section III:	
Amount	_____
Physical size	_____
Complexity	_____
Methods/Technology	_____
Key Activities	_____

**Form CCC****Summary Sheet: Current Contract Commitments / Work in Progress**

Name of Bidder or member of a Joint Venture
---

Bidders and each member to an Joint Venture bid 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.

Name of contract	Purchaser, contact address/tel./fax	Value of outstanding Information System (current US\$ equivalent)	Estimated completion date	Average monthly invoicing over last six months (US\$/month)
1.				
2.				
3.				
4.				
5.				
etc.				

**Form FIN – 2.3.1  
Financial Situation**

**Historical Financial Performance**

Bidder’s Legal Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member Legal Name: \_\_\_\_\_

RFB No.: \_\_\_\_\_

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

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

Financial information in US\$ equivalent	Historic information for previous _____ ( ) years (US\$ equivalent in 000s)						
	Year 1	Year 2	Year 3	Year ...	Year n	Avg.	Avg. Ratio
<b>Information from Balance Sheet</b>							
<b>Total Assets (TA)</b>							
<b>Total Liabilities (TL)</b>							
<b>Net Worth (NW)</b>							
<b>Current Assets (CA)</b>							
<b>Current Liabilities (CL)</b>							
<b>Information from Income Statement</b>							
<b>Total Revenue (TR)</b>							
<b>Profits Before 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 Bidder 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 – 2.3.2**  
**Average Annual Turnover**

Bidder’s Legal Name: \_\_\_\_\_

Date: \_\_\_\_\_

JV Member Legal Name: \_\_\_\_\_

RFB No.: \_\_\_\_\_

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

<b>Annual turnover data (applicable activities only)**</b>		
Year	Amount and Currency	US\$ equivalent
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
	_____	_____
*Average Annual Turnover	_____	_____

\*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 2.3.2. This should be certified by a Chartered Accountant or a Professional with an equivalent internationally recognized title.

\*\*Apart from the overall table for the bidder including all JV members, this table shall also be repeated for each individual JV member.

**Form FIN 2.3.3**  
**Financial Resources**

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.	
2.	
3.	
4.	

## Personnel Capabilities

### Key Personnel

Name of Bidder or member of a Joint Venture

Bidders 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

<b>1.</b>	<b>Title of position: ...</b>	
	<b>Name of candidate:</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
<b>2.</b>	<b>Title of position: ...</b>	
	<b>Name of candidate:</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
<b>3.</b>	<b>Title of position: ...</b>	
	<b>Name of candidate:</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>

	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
<b>4.</b>	<b>Title of position:</b>	
	<b>Name of candidate</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>
<b>5...</b>	<b>Title of position: ..</b>	
	<b>Name of candidate</b>	
	<b>Duration of appointment:</b>	<i>[insert the whole period (start and end dates) for which this position will be engaged]</i>
	<b>Time commitment: for this position:</b>	<i>[insert the number of days/week/months/ that has been scheduled for this position]</i>
	<b>Expected time schedule for this position:</b>	<i>[insert the expected time schedule for this position (e.g. attach high level Gantt chart)]</i>





## Declaration

I, the undersigned Key Personnel, certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:

Commitment	Details
<b>Commitment to duration of contract:</b>	<i>[insert period (start and end dates) for which this Key Personnel is available to work on this contract]</i>
<b>Time commitment:</b>	<i>[insert the number of days/week/months/ that this Key Personnel will be engaged]</i>

I understand that any misrepresentation or omission in this Form may:

- (a) be taken into consideration during Bid evaluation;
- (b) my disqualification from participating in the Bid;
- (c) my dismissal from the contract.

**Name of Key Personnel:** *[insert name]*

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

Date: (day month year): \_\_\_\_\_

**Countersignature of authorized representative of the Bidder:**

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

Date: (day month year): \_\_\_\_\_

## Technical Capabilities

Name of Bidder or member of a Joint Venture
---

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

## Manufacturer's Authorization

**Note:** The Bidder shall require the Manufacturer to fill in this Form in accordance with the instructions indicated. 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. The Bidder shall include it in its bid, if so indicated in the BDS.

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

Request for Bids Title and No.: *[Purchaser insert: **RFB Title and Number**]*

To: **Project Director, Project on Climate Resilient Agriculture (PoCRA)**

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

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 Bidder or Joint Venture** ]* located at *[ insert: **address of Bidder or Joint Venture** ]* (hereinafter, the “Bidder”) to submit a bid 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 bidding results in a Contract between you and the Bidder, the above-listed products will come with our full standard warranty.

No company or firm or individual other than M/s. \_\_\_\_\_ are authorized to bid and conclude the contract for the above goods manufactured by us against this specific RFB. *[This para should be deleted for simple items where manufacturers normally sell the product through different stockists].*

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.

Request for Bids Title and No.: *[Purchaser insert: **RFB 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 Bidder or Joint Venture** ]* located at *[ insert: **address of Bidder or Joint Venture** ]* (hereinafter, the “Bidder”) that it will submit a bid 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 Bidder 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)]*

**List of Proposed Subcontractors**

	Item	Proposed Subcontractor	Place of Registration & Qualifications



### List of Custom Materials

Custom Materials

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## CONFORMANCE OF INFORMATION SYSTEM MATERIALS

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### Format of the Technical Bid

In accordance with ITB 16.2, the documentary evidence of conformity of the Information System to the bidding documents includes (but is not restricted to):

- (a). The Bidder's Preliminary Project Plan, including, but not restricted, to the topics specified in the BDS ITB 16.2. The Preliminary Project Plan should also state the Bidder's assessment of the major responsibilities of the Purchaser and any other involved third parties in System supply and installation, as well as the Bidder's proposed means for coordinating activities by each of the involved parties to avoid delays or interference.
- (b). A written confirmation by the Bidder 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 bid, the Bidder must use the Technical Responsiveness Checklist (Format). Failure to do so increases significantly the risk that the Bidder's Technical Bid 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 Bidder's Technical Bid.

**Note:** The Technical Requirements are voiced as requirements of the *Supplier* and/or the *System*. The Bidder'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 Bidder should indicate *that* – and to the greatest extent practical – *how* the Bidder 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 Bid.

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

**Note:** As a matter of practice, the contract cannot be awarded to a Bidder whose Technical Bid 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 bid evaluation and contract award, Bidders 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 BDS ITB 17.2 required Bidders to bid.

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

### Technical Responsiveness Checklist (Format)

Tech. Require. No. _1	Technical Requirement: <i>[ insert: abbreviated description of Requirement ]</i>
Bidder's technical reasons supporting compliance:	
Bidder's cross references to supporting information in Technical Bid:	

Tech. Require. No. 2	Technical Requirement: <i>[ insert: abbreviated description of Requirement ]</i>
Bidder's technical reasons supporting compliance:	
Bidder's cross references to supporting information in Technical Bid:	

## Form of Bid Security (Bank Guarantee)

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

*[Guarantor letterhead or SWIFT identifier code]*

\_\_\_\_\_

**Beneficiary:** Project on Climate Resilient Agriculture (PoCRA)

PoCRA, 30 , Arcade ,

World Trade Center ,

Mumbai , India

**RFB No.:** *[Purchaser to insert reference number for the Request for Bids]*

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

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

**BID GUARANTEE No.:** *[Insert guarantee reference number]* \_\_\_\_\_

We have been informed that \_\_\_\_\_ *[insert name of the Bidder, 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 bid \_\_\_\_\_ (hereinafter called “the Bid”) for the execution of \_\_\_\_\_ under Request for Bids No. \_\_\_\_\_ (“the RFB”).

Furthermore, we understand that, according to the Beneficiary’s, Bids must be supported by a Bid 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 \_\_\_\_\_ (\_\_\_\_\_) 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 Bid during the period of bid validity set forth in the Applicant’s Letter of Bid (“the Bid Validity Period”), or any extension thereof provided by the Applicant; or
- (b) having been notified of the acceptance of its Bid by the Beneficiary during the period of Bid 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 Bidders (“ITB”) of the Beneficiary’s bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, 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 Bidder, upon the

earlier of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Bidding process; or (ii) forty-five days after the expiration of the Bidder's Bid Validity Period.

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)]*

## Letter of Bid - Financial Part

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

*Place this Letter of Bid - Financial Part in the second envelope marked “FINANCIAL PART”.*

*The Bidder must prepare this Letter of Bid on stationery with its letterhead clearly showing the Bidder’s complete name and business address.*

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

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

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

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

**To: Project Director, Project on Climate Resilient Agriculture (PoCRA)**

We, the undersigned Bidder, hereby submit the second part of our Bid, the Financial Part.

In submitting our Financial Part, we make the following additional declarations:

(a) **Bid Validity Period:** Our Bid shall be valid for the period specified in BDS ITB 19.1 (as amended if applicable) from the date fixed for the Bid submission deadline (specified in BDS ITB 23.1 (as amended if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(b) **Bid Price:** The total price of our Bid, 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 Bid 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 Bidding 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.”)*

(e) **Binding Contract:** We understand that this Bid, 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;

**Name of the Bidder:** *\*[insert complete name of person signing the Bid]*

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

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

**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 Bid submitted by joint venture specify the name of the Joint Venture as Bidder

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

**Appendix to Financial Part: Price Schedules**

### 3. PRICE SCHEDULE FORMS

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#### Notes to Bidders on working with the Price Schedules

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##### General

1. The Price Schedules are divided into separate Schedules as follows:
  - 3.1 C = Total Contract Value
    - 3.1.1 C1: Development, Implementation and Configuration of Digital platform and PoCRA applications
    - 3.1.2 C2: Installation and Maintenance of IoT cost
    - 3.1.3 C3: Satellite Image cost
    - 3.1.4 C4: Cloud Cost
    - 3.1.5 C5: Change request cost: Man Month Rate
    - 3.1.6 C6: Change Request cost: Image Preprocessing
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 Bidders shall have read the Technical Requirements and other sections of these bidding 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 Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with the Instructions to Bidders in the bidding documents prior to submitting their bid.

##### Pricing

4. Entire Bid including the Letter of Bid – Technical Part, Letter of Bid – Financial Part and filled-up Price Schedules shall be submitted online on e-procurement system. Corrections if any in the bid can be carried out by editing the information before electronic submission on e-procurement portal. As specified BDS ITB 17.9, prices shall be fixed and not subject to adjustment during the performance of the Contract.
5. Bid prices shall be quoted in the manner indicated and in the currencies specified in ITB 18.1 and ITB 18.2. Prices must correspond to items of the scope and quality defined in the Technical Requirements or elsewhere in these bidding documents.
6. The Bidder must exercise great care in preparing its calculations, since there is no opportunity to correct errors once the deadline for submission of bids has passed. A single error in specifying a unit price can therefore change a Bidder's overall total bid price substantially, make the bid noncompetitive, or subject the Bidder to possible loss. The Purchase will correct any arithmetic error in accordance with the provisions of ITB 36.
7. Payments will be made to the Supplier in the currency or currencies quoted in its Bid as indicated under each respective item. As specified in ITB 18.2, no more than three foreign currencies may be used, in addition to INR.



### 3.1 Grand Summary Cost Table

Line Item No.	Subsystem / Item	Supply & Installation Prices				
		Locally supplied items	Items supplied from outside the Purchaser's Country			
		<i>[ insert: Local Currency ]</i> Price	<i>[ insert: Local Currency ]</i> Price	<i>[ insert: Foreign Currency A]</i> Price	<i>[ insert: Foreign Currency B]</i> Price	<i>[ insert: Foreign Currency C]</i> Price
1	C1: Development, Implementation and Configuration of Digital platform and PoCRA applications					
2	C2: Installation and Maintenance of IoT cost					
3	C3: Satellite Image cost					
4	C4: Cloud Cost					
5	C5: Change request cost : Man Month Rate					
6	C6:Change request cost: Image Preprocessing					

Name of Bidder:		
Authorized Signature of Bidder:		

### 3.2 Supply and Installation Cost Summary Table

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

#### C1: Development, Implementation and Configuration of Digital platform and PoCRA applications

			<b>Supply &amp; Installation Prices</b>				
			<b>Locally supplied items</b>	<b>Items supplied from outside the Purchaser’s Country</b>			
<b>Line Item No.</b>	<b>Subsystem / Item</b>	<b>Line item</b>	<i>[ insert: Local Currency ]</i> Price	<i>[ insert: Local Currency ]</i> Price	<i>[ insert: Foreign Currency A]</i> Price	<i>[ insert: Foreign Currency B]</i> Price	<i>[ insert: Foreign Currency C]</i> Price
1	Digital Platform Design, Development, Installation and Maintenance	Design, Implementation and Configuration of Digital Platform including all required gateways, Load Testing & Security Audit					
2	Integrated Application Design, Development & Deployment	Watershed Management System					
		Agriculture Extension Services System					
		Farmer Engagement and Feedback System					
		Monitoring and Evaluation System					
		Weather Advisory and Warning System					
		Climate Risk Modelling					
		Climate Disaster Management					

			<b>Supply &amp; Installation Prices</b>				
			<b>Locally supplied items</b>	<b>Items supplied from outside the Purchaser’s Country</b>			
<b>Line Item No.</b>	<b>Subsystem / Item</b>	<b>Line item</b>	<i>[ insert: Local Currency  ] Price</i>	<i>[ insert: Local Currency ] Price</i>	<i>[ insert: Foreign Currency A] Price</i>	<i>[ insert: Foreign Currency B] Price</i>	<i>[ insert: Foreign Currency C] Price</i>
		Financial and Accounting System					
		Web Portal Development					
		Data migration, Data conditioning and development of Integration SDK/API					
3	Other Cost (if any)	System Software Cost ( Not available in cloud GR)					
		Training					
		Other Costs					

**C2: Supply, Installation and Maintenance of IoT cost**

Implementation of 100 IoT units in 50 Farms in the project area identified by PoCRA.

Sr. No.	Subsystem / Item	Line item	Total Cost			
			<i>[ insert: Local Currency ] Price</i>	<i>[ insert: Foreign Currency A ] Price</i>	<i>[ insert: Foreign Currency B ] Price</i>	<i>[ insert: Foreign Currency C ] Price</i>
1	IOT Cost of Supply and Implementation					
2	Cost of Maintenance of IoT for 5 years					
		<b>Total (C2) =</b>				

**C3: Satellite Image cost**

Satellite image shall be required during development phase and implementation phase as per requirements of PoCRA.

Sr. No.	Subsystem / Item	Line Item	Total Cost			
			<i>[ insert: Local Currency ] Price</i>	<i>[ insert: Foreign Currency A ] Price</i>	<i>[ insert: Foreign Currency B ] Price</i>	<i>[ insert: Foreign Currency C ] Price</i>
1	Phase-0: Satellite procurement and preprocessing (400 Sq. KM)					
2	Phase-I : Satellite procurement and preprocessing [24277 Sq. KM ] (Yavatmal, Beed)  Cost for One Year					
		<b>Total (C3)=</b>				

**C4: Cloud Cost**

Sr. No	Subsystem / Item	Line Item	Total Cost			
			<i>[ insert: Local Currency ] Price</i>	<i>[ insert: Foreign Currency A ] Price</i>	<i>[ insert: Foreign Currency B ] Price</i>	<i>[ insert: Foreign Currency C ] Price</i>
	Cloud Cost of 5 Years					
1						
		<b>Total ( C4 )=</b>				

Bidder has to provide the detail sizing of the cloud procurement, System Software’s, Hosting and maintenance for five years

**C5: Man month Rate for Change Request**

Subsystem / Item	Line Item	<i>[ insert: Local Currency ] Price</i>	<i>[ insert: Foreign Currency A ] Price</i>	<i>[ insert: Foreign Currency B ] Price</i>	<i>[ insert: Foreign Currency C ] Price</i>
Man month Rate For Software Development And Modification (Change Request Cost) (MM)	Per man month				

**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 Bidder:		
Authorized Signature of Bidder:		

**C6 : Image Preprocessing Rate for Change Request**

<b>Components</b>	<i>[ insert: Local Currency ] Price</i>	<i>[ insert: Foreign Currency A ] Price</i>	<i>[ insert: Foreign Currency B ] Price</i>	<i>[ insert: Foreign Currency C ] Price</i>
Satellite or UAV data preprocessing: 100 Sq. KM area for One composite image (Change Request Cost)				

**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 Bidder:		
Authorized Signature of Bidder:		





**3.4 Taxes and Duties**

(See ITB Clauses 17.5 and ITB 17.7)

Item	Description of Taxes/ duties levies etc. (Sales and other similar taxes and duties/ fees applicable at the time of invoicing) <sup>5</sup>	Rate of Taxes/ duties/ levies applicable (%)	Amount on which Taxes/duties/ levies applicable	Taxes/duties levies payable
1	2	3	4	5
<b>Figures:</b>				
<b>Words:</b>				
<b>TOTAL</b>				

Name of Bidder: _____  Authorized Signature of Bidder _____
---

<sup>5</sup> Modify if required as per applicable taxes

## Declaration Regarding Tax/Duty Exemption for Information Technology materials

**(Name of the Project)**

RFB No. ....

Description of item to be supplied .....

.....

(Information for issue of certificate for claiming Tax/Duty exemption. Government Order/ Circular Number under which tax/duty Exemption is being sought: .....)

**(Bidder's Name and Address):**

**To**

Project Director,

Project on Climate Resilient Agriculture, PoCRA

.....

Dear Sir:

1. We confirm that we are solely responsible for obtaining tax/duty benefit which we have considered in our bid and in case of failure to receive such benefits for reasons whatsoever, the PoCRA will not compensate us.
2. We are furnishing below the information required by the PoCRA for issue of necessary certificate in terms of the Government of India's relevant Notifications.

(A) (i) Value of import content of supply \* Rs. \_\_\_\_\_  
to be made by the Bidder: (exchange rate on US\$ = Rs. \_\_\_\_\_)  
(Breakup of list of items to be imported with value attached)

(B) (i) Name of the sub-contractor, if \_\_\_\_\_  
any, and whose name is to be included in the main Contract: \_\_\_\_\_

- (ii) Description, quantity and value of the goods to be supplied by the above sub-contractor: Description \_\_\_\_\_  
Quantity \_\_\_\_\_  
Value (Rs.) \_\_\_\_\_
- (iii) Value of import content of supply to be made by the sub-contractor: Rs. \_\_\_\_\_  
(Breakup of list of items to be imported with value attached.) (exchange rate on US\$ = Rs. \_\_\_\_\_)

*(The requirements listed above are as per Current notifications. These may be modified, as necessary, in terms of the rules in force)*

(Signature) \_\_\_\_\_

(Printed Name) \_\_\_\_\_

(Designation) \_\_\_\_\_

(Common Seal) \_\_\_\_\_

\* Please attach details item-wise with cost, if there are more than one items.

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## **SECTION V - ELIGIBLE COUNTRIES**

### **Eligibility for the Provision of Information System**

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

Under ITB 4.8(a) and ITB 5.1: *None*

Under ITB 4.8(b) and ITB 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 – PROJECT ON CLIMATE RESILIENT  
AGRICULTURE- REQUIREMENTS**

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



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## **SCOPE OF WORK**

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## 1. Overview

Government of Maharashtra (GoM) is implementing the World Bank funded Project on Climate Resilient Agriculture in Maharashtra (PoCRA). The project development objective is to enhance climate-resilience and profitability of small holder farming systems in project districts of Maharashtra. The project aims to achieve the objective through promotion of climate resilient technologies and commodity value-chain across approximately 4,000 drought-prone villages in 15 districts (namely, Jalgaon, Aurangabad, Jalna, Beed, Parbhani, Hingoli, Osmanabad, Latur, Nanded, Buldana, Washim, Akola, Amravati, Yavatmal, and Wardha) and approximately 1,000 salinity affected villages in the basin of Purna river spread across Akola, Amaravati, Buldana, and Jalgaon districts.

This project has four components:

- 1) The first component, Promoting Climate- resilient Agricultural Systems, aims to strengthen the adaptive capacity of smallholder farmers to adjust and modify their production systems to moderate potential future impacts from climate events.
- 2) The second component, Post- harvest Management and Value Chain Promotion, aims to support the participation of smallholder farmers in Farmer Producer Organizations (FPOs) and integration of these FPOs in value chains for crops relevant to the climate agenda, and to strengthen the supply chain for climate- resilient crop varieties in the project area.
- 3) The third component, Institutional Development, Knowledge and Policies for a Climate Resilient Agriculture, aims to enhance the transformative capacity of institutions and stakeholders to promote and pursue a more climate resilient agriculture, with sector strategies and policies based on strong analytical underpinnings and cutting- edge climate, water and crop modelling.
- 4) The fourth component, Project Management, covers the activities of the Project Management Unit (PMU) set up by the GoM during the project preparation phase

The Project on Climate Resilient Agriculture (PoCRA) aims to enhance climate resilience and profitability of 1.4 Million small (1-2 ha) and marginal (less than 1ha) farmers in 5142 villages across 15 drought and salinity/ sodicity affected districts of Maharashtra. **The Project Development Objective (PDO) is to enhance climate-resilience and profitability of smallholder farming systems in these selected districts.**

The objective of this assignment is to provide support on aspects of design, development and implementation of an innovative, integrated, user (including farmer, the primary stakeholder) friendly and scalable Digital "Platform" (comprising of digital infrastructure, applications for multi-channel service delivery and data analysis).

## 2. Scope of Work

The project management unit of POCRA is in the process of commissioning the development of a comprehensive 'future ready digital platform' for facilitating all the activities as well as provisioning delivery of public services to the project beneficiaries in a comprehensive manner through multiple channels. The proposed Integrated Digital platform will be developed on an Open source and Open standards-based platform with features of standardizations, openness, scalability and security inbuilt for all the applications hosted on the platform.

This proposed Integrated Digital Platform will be an integrated back-end platform that provides domain specific & common services using standard interfaces (APIs) that can be used for rapid application development in a mash-up form. The PoCRA digital platform is envisaged as a 100% API driven architecture built with open standards to ensure openness, multi-user ecosystem, specific vendor/system independence, scalability and providing other ecosystem players to build applications that can be plugged to the platform and can be accessed from multiple devices.

The selected Supplier will design, build, deploy, host and maintain an Integrated Digital platform for PoCRA, hosted on cloud, that will serve as a dynamic agriculture suite with multiple applications (applications would be built by Supplier and other third party/existing applications also need to be plugged to the Platform by Supplier), System Software needed to host applications and other components as listed in this document. The Supplier will also build all necessary channels like the Web Portal, Mobile Applications, Call Centre, etc.

The Supplier has to design and procure cloud services; and deploy, host and maintain the PoCRA digital platform on the cloud to provide flexibility and scalability in terms of compute and storage requirements of the cloud.

The platform with a host of applications will help meet the Project Development Objectives (PDO) of PoCRA, i.e. to enhance climate-resilience and profitability of smallholder farming systems in the selected districts of PoCRA.

Supplier also has to design, build, deploy, configure, test and maintain applications that would be hosted on this platform. The list and requirements of the applications to be built by the Supplier is listed in further sections of the document. Apart from building these applications, Supplier has to host these applications on the cloud and also host and migrate other PoCRA applications on the envisaged PoCRA platform.

Supplier has to design and build various channels for accessing the portal like web portal, mobile application, etc. and Need to provide the application to Manage the call center. Multi-Channel delivery of services is one of the most critical success factor for this platform. The beneficiaries would access the portal and app using mobile devices, desktops, tablets, IVR and other identified channels.

The selected Supplier has to design and build training plans, training modules and training manuals for Sensitization of PoCRA staff and the identified field staff on the use of the digital platform, applications, web portal, new business processes along with specialized technology training (as needed). The Supplier would also train certain master trainers who would be able to train new employees/staff.

### **Satellite Data Procurement, Satellite data Image processing for Farmer Advisory, Crop Disaster Management & Yield Estimation**

The Supplier will be responsible for acquiring multi-spectral satellite imagery with 5m or better geo-resolution and temporal resolution should not be more than 10 days for optical data. Output of the crop map generated by the satellite image should be very precise and accurate within the acceptable limit of minimum 80%.

The Supplier should prepare the time schedule indicating frequency of the procurement of satellite image data based on agro-climatic zone (area). The final outcome of Crop Advisory reports like total sown area, Commodity wise sown area, Crop health, yield estimates, Crop disaster report shall be quality checked by nominated agency/agencies as per the guideline provided by technical committee for such work. The frequency of obtaining satellite imagery must be done so as to provide accurate information to the farmer on a weekly basis.

### **IOT-based Irrigation**

The Supplier must set-up a system which will regulate water supply for irrigation using algorithms which will optimize water flow based on data captured by soil moisture IOT sensors place in the field.

- The IOT sensor data must be uploaded to a cloud-based storage. Suitable control systems which will actuate the pump based on the irrigation schedule prescribed by the algorithm should be set up. Alert system via SMS must be in place to inform the farmer about equipment failures, timing and volume of irrigation. The farmer must also be able to enquire about irrigation conditions in the farm via the SMS facility and should also be able to switch the pump ON and OFF.
- The Supplier is required to undertake the following tasks to successfully implement the system:
  - Collect soil samples to calibrate sensors for each field.
  - Set up two IOT soil sensors for a field.
  - Sensors need to be powered and fitted with hardware to transmit data to the Data Collection Node (DCN) using LoRa or GSM network.
  - DCN should contain GSM/GPRS/4G transmission so as to upload data to the cloud.
  - Create and train a water regulation algorithm which will give a weekly irrigation schedule. The algorithm will be trained regularly using the previous week's data.
  - Setup a water pump mechanism regulated by a micro-controller/controller. The controller should be regulated by the algorithm and by the farmer via the SMS delivery system or mobile application.
  - A mobile application, web portal and SMS delivery system with a user-friendly GUI will be setup to communicate the irrigation schedule, any changes or pump usage to the farmer. The water should be pumped only after the farmer gives a confirmation via the SMS delivery system.
  - Setup a maintenance and support infrastructure for hardware components and cloud.

Supplier also be responsible for processing the data of IOT devices which in near future implemented by department at fields or by other appointed vendor by the department or directly IOT device implemented by the Farmer and will also provide advisory to the Farmers.

### 3. Highlights of scope of work

The Table below describe the highlights of scope of work

Sr. No.	Description
1.	Design, Supply, Installation, Operations and Maintenance of Digital Platform along with all system software needed to host applications and other components
2.	Design and preparation of Solution architecture, Platform Solution, Technology Mapping and preparation of SRS/BPD & SDD
3.	Development, Configuration, Customization and Integration of new applications as per the required functionalities and integration with existing application and third-party application deployed on the digital platform.
4.	Maintenance and management of Digital Platform and applications developed by Supplier for project contract period.
5.	Development of APIs / Sockets / SDK's for integration with multiple applications and systems deployed or integrated on digital platform
6.	Data Migration, Data normalization and conditioning from the required system
7.	Establish gateways for E- Payment, Mobile Messaging, DMS, IVR, SMS, Bulk SMS, Provisioning Integrated Mail, Messaging, CMS and shared/common space for users
8.	Procurement, Management and maintenance of cloud as per the Government of Maharashtra latest Cloud GR
9.	Supply & Management of all performance management tools for measuring performance of Digital platform
10.	Management of Digital Certificates as required for the platform/portal/applications
11.	Conduct UAT (User Acceptance Testing), load & Performance Testing
12.	Designing the training Material for End User Training and Development of Online Training modules
13.	Provide adequate training to the Helpdesk staff, build required content & FAQs for Helpdesk team, provide the trainer which will act as single point of contact for all helpdesk related queries on daily basis
14.	Provide training to the users on the use of PoCRA portal, applications, new business processes and other identified modules
15.	Satellite Data Procurement, Satellite data Image processing for Farmer Advisory, Crop Disaster Management & Yield Estimation
16.	Pre-processing of Satellite/ UAV image
17.	Implementation of IOT for Soil Moisture and Temperature measurement

## 4. Detailed Scope of Work

The detailed scope of work for building the various components of the Integrated PoCRA platform is as follows:

### 4.1 PoCRA Digital Platform

The selected Supplier will design, build, implement, deploy host and maintain an Innovative, Integrated and User Friendly “Integrated Digital Platform” for PoCRA, comprising of digital infrastructure, system software, databases, applications for multi-channel service delivery and data analysis. This dynamic platform would be hosted on cloud to ensure an elastic and scalable solution.

The proposed PoCRA digital platform is required to be designed such that it is innovative, integrated, user friendly and elastic digital and new media platform comprising applications for multi-channel service delivery and data analysis while providing common engine for security, data privacy, AI to all applications.

The integrated platform will accept inputs from multiple systems and applications, do context broking and provide personalized information services to variety of beneficiaries based upon their location and profile. Some of the broad services the platform would provide are: Weather based alerts and crop modelling & advisory, Agri Business and value chain management, Disaster Management, Monitoring & Evaluation, Training, etc.

The proposed platform is equipped to capture and analyse various data sets to churn out meaningful advisory. The digital platform envisages quality delivery of advisory and support services to the main stakeholder, the farmer. It has been designed to support feeding-in of real-time information from on-ground stakeholders/functionaries and extraction of data from various institutions/programs run by the government. The integrated platform proposes to capture information such as soil health from data of soil health card, localized weather data from AWS (Automatic Weather Stations) and sensors. It attempts to superimpose all these information with crop data through NDVI images, GIS mapped structures such as farm ponds etc. The PoCRA digital platform capabilities include assimilation of complex data backed by analytics and knowledge engine to produce holistic ‘farm-specific’ advisory.

With functionalities of disseminating advisory and enabling two-way interaction through various mediums such as video, text, audio and image, this PoCRA digital platform strives to deliver to the needs and convenience of the individual farmer

The platform boost of various innovative tools and breakthrough features like crop calendar, custom hiring centres, e-commerce marketplace, mapping of warehouses, disaster support, grievance redressal, etc. which would help achieve the objective of the project. A detailed description and requirements are in the Functional Requirement Specification in the Annexure of the RFB

The proposed PoCRA digital platform would aim to strengthen linkages between external stakeholders such as product and service providers and the farmer/farmer groups to support efficient and quality delivery of services. The proposed platform is expected to provide an integrated view of information in real-time backed by a state of the art user experience for the various stakeholders.

#### 4.1.1 Platform Development

The Selected Supplier would design, build, deploy, manage and host the platform as per the requirements mentioned in the document. The selected Supplier after doing a study and analysis can suggest additional features and specifications to the platform. The Supplier must follow the required functional and non-functional requirements for the platform like openness, configurability, security, etc. to ensure the platform achieves the envisaged benefits.

#### 4.1.2 User Ecosystem

The envisaged PoCRA digital platform would have an ecosystem of users that would interact with the platform and various applications via portal, mobile, tabs and other interfaces. An indicative list of users of the proposed platform is as follows:

Sr. No	Users	Descriptions
1.	Beneficiary/ Farmer	<ul style="list-style-type: none"> <li>▶ Small and marginal farmers falling within the 5000 villages across 15 drought and salinity/ sodicity affected districts of Maharashtra</li> </ul>
2.	Krushi Mitra (KM)	<ul style="list-style-type: none"> <li>▶ Progressive farmer who is a resident of the POCRA identified village</li> <li>▶ KM would help in mobilization of farmers for activities including FFS (Farmer Field School)</li> <li>▶ There is one Krushi Mitra for every village under POCRA</li> </ul>
3.	Agriculture Assistant (AA)	<ul style="list-style-type: none"> <li>▶ A village level functionary who assists project beneficiaries to outline the technical specifications of project implementation</li> <li>▶ There is one agriculture assistant in every POCRA identified village</li> <li>▶ AA assists the VCRMC in project monitoring and reporting</li> </ul>
4.	Village Climate Resilience Management Committee (VCRMC)	<ul style="list-style-type: none"> <li>▶ The Village Climate Resilience Management Committee (VCRMC) leads the process of planning, preparation and implementation of Village Development Plan (VDP). It is formed during the Mini/ Micro Level Watershed Planning (MLP) exercise.</li> <li>▶ The committee prioritizes and selects beneficiaries</li> <li>▶ The committee manages the Vulnerable Groups Fund (VGF)</li> <li>▶ Submits monthly and annual financial reports to PoCRA</li> </ul>
5.	Cluster Assistant (CA)	<ul style="list-style-type: none"> <li>▶ These are cluster level functionaries identified by PoCRA and they overlook project progress as per Mini/ Micro Level Watershed Plan (MLP) at a cluster level</li> <li>▶ They monitor activity implementation and completion</li> </ul>

Sr. No	Users	Descriptions
6.	Krishi Vigyan Kendra (KVK)/Scientist	<ul style="list-style-type: none"> <li>▶ The Krishi Vigyan Kendras (KVK) are agricultural extension centers created by Indian Council for Agricultural Research (ICAR) and its affiliated institutions at district level to provide various types of farm support to the agricultural sector</li> <li>▶ These are located at the district level</li> <li>▶ The scientists of KVKs are required to conduct the FFS under PoCRA</li> </ul>
7.	PoCRA Appointed Personnel	<ul style="list-style-type: none"> <li>▶ These are agencies/personnel appointed by PoCRA for implementation of certain tasks</li> </ul>
8.	Sub-Divisional Agricultural Officer (SDAO)	<ul style="list-style-type: none"> <li>▶ Sub-Divisional Agricultural Officer is an existing functionary that would prepare budgets and approve activity invoices for payments</li> <li>▶ The SDAO supervises preparation of monthly, quarterly and annual accounts of the project</li> <li>▶ The SDAO supervises preparation and maintenance of accounting records</li> </ul>
9.	District Superintending Agriculture Officer (DSAO)	<ul style="list-style-type: none"> <li>▶ District Superintending Agriculture Officer at district level is a key person for approval of applications and payment processing. Besides, s/he is responsible for overall management and co-ordination of PoCRA activities at district level</li> </ul>
10.	Project Director – Agricultural Technology Management Agency (PD- ATMA)	<ul style="list-style-type: none"> <li>▶ Project Director – Agricultural Technology Management Agency belongs to the ATMA scheme and supports in various activities of PoCRA</li> </ul>
11.	Agribusiness Specialist – ATMA	<ul style="list-style-type: none"> <li>▶ Agribusiness Specialist – Agricultural Technology Management Agency belongs to the ATMA scheme and would assist in various activities of PoCRA including preparation and review of business plans of FPOs</li> </ul>
12.	Taluka Agriculture Officer (TAO)	<ul style="list-style-type: none"> <li>▶ Taluka Agriculture Officer is based out of taluka. The personnel will help in administration, advisory and operations of PoCRA</li> </ul>
13.	Agriculture Officer (AO)	<ul style="list-style-type: none"> <li>▶ Agriculture Officer will help in administration, advisory and operations of PoCRA</li> </ul>
14.	PoCRA IT PMU	<ul style="list-style-type: none"> <li>▶ PoCRA IT PMU would manage and regulate the PoCRA digital platforms in entirety</li> </ul>
15.	Inspector	<ul style="list-style-type: none"> <li>▶ Inspector is a personnel appointed by DSAO/ SDO for inspection of activity completion if required</li> </ul>
16.	Knowledge Partners (KP)	<ul style="list-style-type: none"> <li>▶ Knowledge Partners include State Agriculture Universities, KVK and other public sector organizations providing domain expertise required for PoCRA operations. E.g. CRIDA, YASHADA, VANAMATI</li> </ul>



Sr. No	Users	Descriptions
17.	District Level Coordination Committee (DLCC)	<ul style="list-style-type: none"> <li>▶ District-level coordination committee headed by district collector for approving various plans including cluster level Detailed Project Reports (DPR)</li> </ul>
18.	Gram Sabha (GS)	<ul style="list-style-type: none"> <li>▶ Existing village level governing body, empowered to approve procurement of goods and works under PoCRA</li> </ul>
19.	Representatives/ Volunteers	<ul style="list-style-type: none"> <li>▶ Representatives/ Volunteers are short term personnel for assistance in framing the MLP</li> </ul>
20.	Vendor	<ul style="list-style-type: none"> <li>▶ Public or private sector goods or service provider complying with the procurement guidelines of PoCRA</li> </ul>
21.	FIG/FPO/FPC	<ul style="list-style-type: none"> <li>▶ A Farmer Producer Organization (FPO) is a legal entity formed by primary producers, viz. farmers, milk producers, fishermen, weavers, rural artisans, craftsmen.</li> <li>▶ A FPO may be a producer company (i.e. FPC), a cooperative society or any other legal form which provides for sharing of profits/benefits among the members. In some forms like producer companies, institutions of primary producers can also become member of PO</li> <li>▶ A Farmer Interest Group (FIG) is a self-managed, independent group of farmers with a shared goal and interest</li> </ul>
22.	Resource Agencies	<ul style="list-style-type: none"> <li>▶ Agencies employed by PoCRA PMU for supporting implementation of PoCRA project. E.g. M&amp;E agencies, MLP preparation agencies etc.</li> </ul>
23.	Bank	<ul style="list-style-type: none"> <li>▶ Banking institution would provide for finance and credit related information on the PoCRA digital platform</li> </ul>
24.	Call Centre Agent	<ul style="list-style-type: none"> <li>▶ A call center agent is a dedicated resource at the call center set up by PMU PoCRA to address the complaints, grievances and other issues/questions of various stakeholders</li> </ul>
25.	PoCRA Staff/ PoCRA Functionaries	<ul style="list-style-type: none"> <li>▶ PoCRA staff at gram panchayat, block, district and state level</li> </ul>
26.	DBT System	<ul style="list-style-type: none"> <li>▶ The Direct benefits transfer system of the Government of Maharashtra is a web portal that enables the mechanism of fund transfer of subsidies directly to the beneficiary's bank accounts.</li> </ul>
27.	Department of Agriculture (DoA)	<ul style="list-style-type: none"> <li>▶ Officials of the Department of Agriculture</li> </ul>
28.	Government of Maharashtra (GoM)	<ul style="list-style-type: none"> <li>▶ Officials of the Government of Maharashtra</li> </ul>
29.	Trainer	<ul style="list-style-type: none"> <li>▶ Trainer appointed by the PoCRA PMU to provide training services under the project</li> <li>▶ These could include KVK trainers, or PoCRA appointed personnel/agencies</li> </ul>

<b>Sr. No</b>	<b>Users</b>	<b>Descriptions</b>
30.	Trainee	▶ These are individuals who would be attending trainings provided under the project
31.	Host farmer	▶ These are the farmers who provide their farm for training purposes under FFS- farmer field school
32.	Self Help Group (SHG)	▶ Self Help Group refers to the members of the SHG ▶ SHGs registered under the project area
33.	System	▶ System refers to PoCRA's digital platform
34.	Helpdesk	▶ Helpdesk members would provide in-bound as well as out-bound services to the farmer through Calls/SMS/Video call etc.
35.	Public Organization	▶ Agencies relevant to PoCRA like CRIDA, YASHDA etc.
36.	State and Central Government agency	▶ Agencies that belong to the state or the central government
37.	KVK authorized stakeholders	▶ KVK appointed personnel for carrying out certain activities on behalf of KVK staff
38.	PoCRA assigned personnel	▶ Personnel that would support PoCRA activities, authorized by PoCRA for a short duration of time

**Table – Approximate List of Concurrent Users**

<b>Sr.No</b>	<b>Users</b>	<b>Approx. number of Users</b>	<b>Approx. Number of Concurrent Users - in %</b>
1	Beneficiary/ Farmer	1.7 Million	1 %
2	Agriculture Assistant (AA)	2000	40%
3	Village Climate Resilience Management Committee (VCRMC)	3,500	10%
4	Cluster Assistant (CA)	500	60%
5	Krishi Vigyan Kendra (KVK)/Scientist	22	10%
6	PoCRA Appointed Personnel	550	30%
7	Sub-Divisional Agricultural Officer (SDAO)	36	30%
8	District Superintending Agriculture Officer (DSAO)	15	30%
9	Project Director – Agricultural Technology Management Agency (PD-ATMA)	15	30%

Sr.No	Users	Approx. number of Users	Approx. Number of Concurrent Users - in %
10	PoCRA IT PMU	10	50%
11	FIG/FPO/FPC / Self Help Group (SHG)	2000	10%
12	Resource Agencies Personnel	500	30%
13	Call Centre Agent	20	70%
14	Training Coordinators	200	10%
15	Other Users	500	50%

#### 4.1.3 Features of the Integrated Digital Platform

The platform proposed under the project should be a well-established and globally recognized platform and having the following essential features:

1. **Standards Based and Open** – The proposed platform by the prospective bidders should be compliant with industry standards for shared services platforms and Open to avoid being captive by any proprietary technologies, have provisions for data access by third parties and should be modular enabling scale up and reuse by third parties. The developed platform should use vendor neutral APIs.

Because the PoCRA digital platform system is conceived as a ‘common platform’ on which many applications will be built/ interfaced, it is critical that all 3rd party interfaces be fully interoperable without any affinity to platforms, programming languages, network technologies. This open interoperability is an absolute requirement for the platform to be adopted on a large scale

2. **Interoperability** – The platform should be non-intrusive in allowing integration of different services and ICT solutions by third party ICT application providers. In addition, the platform should allow integration/interoperation with different technologies, devices and protocols
3. **Scalable** – The platform deployed as the prototype should mandatorily be cloud based and based upon service models. The service models can be chosen from Software as a service (SaaS), Platform as a service(PaaS) and Infrastructure as a service (IaaS). The platform should demonstrate robustness i.e. strong tolerance to failures, should be adaptable to technological changes and demonstrate capabilities in managing security and privacy concerns.

4. **Multi-Channel Service Delivery** – The platform should enable multi-channel delivery of services via Web portal, mobile application, call centre, SMS, IVR and other channels to enable inclusion and participation from varied stakeholders. The User interface should be universal across all channels and should constantly evolve. The system design should be based on an API first approach.

#### 4.1.4 API First Approach

- The envisaged PoCRA digital Platform would be based on an Open API approach. The Platform would be accessible from multiple touchpoints like a web portal, mobile application and other interfaces.
- All components must be loosely coupled using open interfaces (APIs) ensuring interoperability across components and subsystems. Also, in the future it is critical for third party applications to interoperate with the platform
- There will be multiple applications that would connect to the PoCRA platform via secured APIs.
- The API based architecture would enable consumption across technologies and platforms (mobile, tablets, desktops, etc.) based on individual requirements.
- This architecture would also be adaptable of changing business needs and end user requirements and expectations.
- It will integrate with other applications, systems, software and databases already being used or that would be built in the future.
- SUPPLIER has to set up, operationalise and maintain systems and processes for APIs like
  - Authorization and license key management
  - Environment management
  - Standardization
  - Authentication
  - Version Control
  - API retirement
  - API Governance & SLA enforcement
  - Security Governance
  - Audit Trail

#### **Advantages of API based Approach**

- **Innovative and Evolving:** The platform would be very easy to evolve and adopt new technological advancements (Such as additional applications, new interfacing devices, new capabilities, etc.) without having to change the entire architecture/platform
- **Scalability:** For the PoCRA platform to scale, load has to be distributed across various systems. This is key for responsive user experience as well as core system scaling. Instead of entire application being monolithic and access via web portal, it should be built with stateless APIs that can be scaled horizontally. The platform would be designed as a lean platform that can be scaled to needs. APIs allow load balancing across data centres for scale and distributing user interface load to applications
- **Agility:** When entire system is loosely coupled via components exposing APIs, it allows individual API implementations to change without having to affect the rest of the system.

Building the entire system as a monolithic application completely takes away the agility of the Digital platform to adapt to the changing business rules. API driven approach allows encapsulation of components and data models without every other part of system knowing the details. API based design also allows automated testing of the entire system to ensure changes are quickly tested in a completely automated way to avoid regression.

- **Security:** Accessing data only via APIs ensure centralized management of security controls. Encapsulating access control, auditing, confidentiality (via encryption), and integrity (via signatures) is only possible via common APIs.
- **Data consistency:** Providing APIs to access all data models and functionality ensures data is not duplicated unnecessarily. This offers a single source of truth of data to be managed via common APIs. In addition, providing centralized data validation, digital signature, etc. ensures data is consistent and accurate across the system
- **Cost Effective:** With a simple, scalable, API driven, farmer centric and ecosystem partners the cost of the entire platform can be kept minimal while still providing all required core features.

#### 4.1.5 Technological and Non-Functional Requirements of the Platform

Following technological and non-functional requirements should be built in to the “Integrated Digital Platform for POCRA “:

##### **Technological requirements:**

1. **Internet of Things (IoT) Device based Data Collection:** Such a platform must utilize IoT devices in the field to collect as much data across domains as possible. Such IoT devices should be configurable to suit different implementation. Limited intelligence may be stored on the IoT devices to infer the collected data. The devices should be able to be integrated with intermediary devices as well as network devices at the data centre. Data from the IoT devices should be transmitted to the cloud.
2. **Satellite Data:** The procurement of various satellite image data will be done by the successful bidder i.e. Supplier The spatial resolution of satellite image should be 5 meter or better resolution and temporal resolution should not be more than 10 days for optical data for crop session and 30 days in March to May . In absence of optical data, microwave SAR data can be used not more than 10-meter resolution and . Additionally, if required, some other spatial resolution of satellite image may be used for data processing. The output of crop map generated by the satellite image should be very precise and accurate within the acceptable limit of minimum 80%. The agency should prepare the time schedule indicating frequency of the procurement of satellite image data based on agro climatic zone (area).

The final outcome of Crop Advisory reports like total sown area, Commodity wise sown area, Crop health, yield estimates, Crop disaster report. shall be quality checked by nominated agency(ies) as per the guideline provided by technical committee for such work. The Supplier should release every week the advisory on farmer level on the required parameters. So Supplier has to plan the procurement of Satellite Data accordingly.

3. **Cloud Computing:** The entire solution should be housed out of “Cloud Infrastructure” so as to be available to all the stake holders through internet. Relevant stakeholders should be able to log in to such a system on a need to know basis through secured log in infrastructure. Refer to GR for ‘Cloud Computing Policy- Empanelment of Cloud Service Providers and Guidelines for Government Organization’ issued by Directorate of Information Technology, Government of Maharashtra dated 4<sup>th</sup> August 2018. Supplier needs to procure the cloud as per the latest GR.
4. **Big Data and Analytics:** Since the volume of data so collected is likely to be voluminous and unstructured, Big data analytics tools should be utilized to interpret the data and populate an intelligent database. Initial data from IoT devices may be collected in to unstructured file systems. However, analytics algorithms should interpret such data and populate a structured relational database with inferenced data.
5. **Machine Learning and Artificial Intelligence:** Machine learning and Artificial Intelligence must be an integral part of the platform for the platform to parse, comprehend and understand the data generated. The platform should be able to provide intelligent actionable decisions and advisory based on its learning.
6. **Image Recognition:** The platform must include features of image recognition and processing (Not OCR) to recognize the images being uploaded by multiple stakeholders and for images coming from different systems and databases.
7. **GIS:** This platform will rely heavily on GIS technologies as major structures will be geo-tagged, and the project envisages on having map views for monitoring, evaluation and also for authentication
8. **Use of UAV:** Unmanned Aerial Vehicle (UAV) provides flexibility to capture high resolution image of a particular area of interest under the cloud and during the disaster like landslide, hailstorm, flood, etc. Exclusive and enormous use of Unmanned Aerial Vehicle could be used for crop damage or loss assessment. Within the defined boundaries and in order to cover the maximum area in shortest period of time with the maximum transparency, use of UAV is essential. UAV images should be used along with camera calibration parameters for the geo-referencing and further processes. It should also be used for the ground truthing if required of the digital signature of the crops. IT is the responsibility of the Supplier to in integrate/ consume / Process the UAV data provided by the department in the future or department appointed UAV vendor or Supplier will allow third party to access the data through API and generate the required output as per the requirement.
9. **API Gateway:** The platform must be able to integrate with existing platforms and the platform should be accessible for building applications or portals in the future. An API First approach should be used for the same
10. **BPM and Workflow:** All the workflows defined in the RFB need to be a part of the system.
11. **Offline Field Data Collection:** The system should be able to store the data locally in case the cloud service is temporarily unavailable.

12. **Content and Document Management:** A document management system will be useful to track, manage and store documents and reduce paper. This will enable the creation of document logs.
13. **Development of NOC:** - Supplier has to prepare the Network Operations Center (NOC) for PoCRA and provide the required Manpower to Maintain and Manage the PoCRA system, Cloud infrastructure, Process the Data, Generate the advisories and reports as per the requirement.
14. **Satellite Data Preprocessing:** Supplier need to preprocess the Satellite data for the use of generation of advisory or report. Though Supplier may have to procure Satellite data and Generate the advisory and reports for Phase-0 and Phase-1 but Supplier may have to preprocess the Satellite data procured by PoCRA appointed third party agency for other geographic area and deploy the preprocessed data on PoCRA platform which can be accessed by third party applications.

**Non-Functional requirements:** The developed platform must address the following non-functional requirements of an Integrated Digital platform:

1. **Interoperability:** Since the developed Shared Services platform is likely to interact with legacy and new systems the developed platform should be able to seamlessly interoperate with existing and evolving systems in the climate resilience and agricultural space.
2. **Scalability:** The developed platform should be easily scalable to accommodate new applications as well as enhanced datasets and user base on the developed system.
3. **Security:** Since the developed platform shall be hosted on a cloud platform, the system must be highly secured and must adhere to existing security standards.
4. **Privacy:** Since the system is likely to capture and store farmer centric data, it should ensure privacy of the stored data.
5. **Configurability:** The developed system should not be hard coded and should be easily configurable.
6. **Context Sensitivity:** The developed system should be context sensitive and should adapt to changing scenario dynamically.
7. **Reliability:** The platform must have appropriate measures to ensure processing reliability for the data received or accessed through the solution. It is imperative to ensure zero loss of data and prevent unauthorized access or alteration to the data.
8. **Availability:** The solution design and deployment architecture should ensure High availability. The design should incorporate creation of Standard Operating Procedure (SOP) for system upgrades, maintenance and other procedural needs.
9. **Driven Decision Making** - The platform should be driven on data based decision making given the huge gamut of data that would be available on the platform, coming from transactions, queries, submissions, etc.

#### 4.1.6 Proposed Indicative Technical Architecture of the Platform

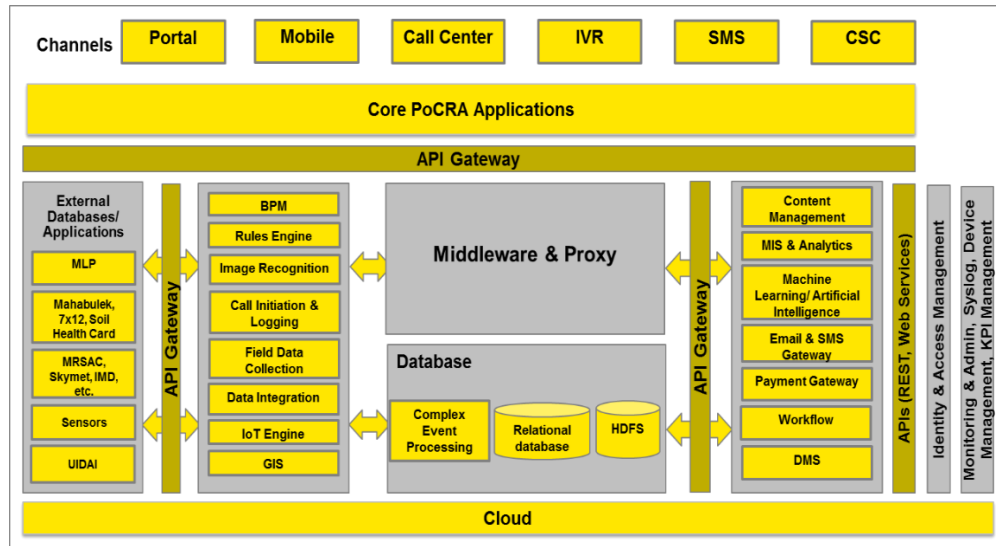


Fig 4.1.6 PoCRA Digital Platform

The proposed digital platform provided above in fig 4.1.6 would be hosted on cloud procured as per cloud GR of DIT, Government of Maharashtra, with API based integration with multiple System software, middleware, web layer, database and service delivery channels. The platform would host a series of applications built by Supplier. It will also host applications built by third party and existing state and central government applications using API gateway, as shown in the figure above.

The platform will integrate with various external databases and applications like the existing government applications of Mahabulek, e-Thibak, MTS, etc. The platform will also host and integrate applications built by third parties like the Micro Level Planning (MLP) application.

The platform will also extract data from various IoT devices, Sensors, Weather stations, Satellite Images, GIS, etc. along with data uploaded by stakeholders like photographs, forms, farm locations, etc. The PoCRA digital platform should include capabilities of assimilation of complex data backed by analytics.

The Supplier will configure and host the required System Software on this platform like IoT engines, Document Management System. A tentative list of this system software has been provided in Annexure I of this document.

The list of functional applications to be built by Supplier has been detailed out in this document.

The platform will be integrated with multiple service delivery channels like Portal, mobile application, Call Centre, IVR, SMS, CSC, etc. Thus, the various functional application to be provided on the PoCRA platform will be deployed in an omni channel mode, across the required channels.

#### **Systems to be implemented inside the Application:**

The following systems are essential to the project for efficient working and management of the digital platform:



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### 1. Workflow Management System:

- PoCRA would provide license for workflow management system, details for which have been added in the licenses available section of this document. The Supplier could either use this or also provide other system software as required
- The Supplier should configure the Workflow Management system as per the requirements of PoCRA

### 2. Document Management System

- PoCRA would provide license for document management system, details for which have been added in the licenses available section of this document. The SUPPLIER could either use this or also provide other system software as required
- The Supplier should also configure Document Management System (DMS) for the PoCRA internal users.
- The core capabilities of the DMS must include functions like: check-in/check-out, version control, security, library services for business documents, etc.
- It is required that the DMS must include Records management for long-term retention of content through automation and policies, ensuring legal, regulatory and industry compliance

### 3. Content Management System

- The Supplier needs to develop/provide “Content Management System” (CMS) within the PoCRA platform, allowing PoCRA management to dynamically update elements / sections / contents /forms / formats / notices etc. of their Application that changes regularly, without the constant need of a web developer. The CMS should offer easy administration of the overall PoCRA Application, simply requiring PoCRA nominated staff members to log-on to a secure area of this Application and complete simple web forms and upload to the centrally controlled database, so that the changes are reflected throughout the Application pages / sections.
- The CMS should have the following indicative features or capabilities:
  - a) Content Authoring
  - b) Content Publishing
  - c) Content Delivery
  - d) Content Storage Management
  - e) Content Exit and Archival
  - f) Should have preconfigured generic templates and workflows for the content management
  - g) Distributed authorship of portal content across divisions.
  - h) Separation of content from presentation, which allows authors to focus on content rather than web design.

- i) Management of revision, approval, publishing and archiving processes in an easy and automated manner.
- j) Centralized template management for consistency within portal.
- k) Content repurposing for different audiences and different interfaces.
- l) Facilitated metadata generation and management which enables effective content discovery.
- m) Content storage management of all types of content; text graphic, audio, video etc. it has to be dynamic in nature.
- n) In context contribution, preview, updates and approvals.
- o) Email notifications for automated content edits and reviews.
- p) Native content conversion to web formats. Supplier should provide formats. Existing formats may not be available for reuse.
- q) Both dynamic and scheduled publishing models.
- r) CMS should be able to generate content feeds.
- s) CMS should be able to be integrated with any workflow systems, which supports e-forms. CMS should be able to generate and support the e-forms
- t) CMS should be Modular and extensible.
- u) CMS should have an integrated Help function.
- v) SUPPLIER should come up with a technology innovation for the dynamic nature of policies and working of the department. Any dynamic change if approved by PoCRA can be accepted.
- w) It is up to Supplier whether to provide the CMS solution which is an integrated product of two or more product or it is a single solution

#### 4.1.7 Platforms for Deployment

##### **Web Portal:**

The PoCRA web portal would be an integral interface for various users. The user would have to pass the authentication to reach to the home page where he/she would get a dashboard to access all the PoCRA functional applications role-based and personalised to serve his/her needs. For e.g. farmers would get a view of the status of their applications and crop calendars, Agriculture Assistant would get a view of approvals pending for him/her, The PMU should get dashboards giving status of various schemes, etc. The portal should have pre- filled forms by fetching data for that beneficiary from the database.

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Some of the specifications, but not limited to, of the web portal are as follows:

- The web portal should have strong authentication and security features and should maintain security rights and privileges through an Integrated Management Solution
- The portal should not allow concurrent sessions for same user.
- UI layer should not have its data
- The portal should support workflow management
- The portal should support all popular browsers like Internet Explorer, Chrome, Firefox, etc.
- The portal should be compatible to run on popular mobile operating systems
- The portal should have multi-lingual capabilities
- The portal should be interoperable with industry standard databases
- The portal should provide search engines with advanced full text search capabilities
- The portal should support HTTPS protocol on Secure Socket Layer (SSL)
- The portal should provide support for comprehensive audit trail
- The portal should support web services and integrate with common business applications
- The portal should be integrated with standard email and instant messaging services
- The portal should integrate with other products and components of the platform via open standards
- The portal should support virtualization, encryption and compression features

### **Mobile Application:**

Apart from the web portal, a mobile application version of the PoCRA system should be available. Some of the specifications, but not limited to, of the mobile application are as follows:

- The Mobile Application should provide an intuitive and user-friendly GUI that enables users to navigate and apply actions with ease. The GUI should be responsive with very little or no delays or time lag at launch or whilst navigating through screens
- It should have pre-filled data and forms
- It should be compatible with all leading mobile platforms and OS
- It should incorporate analytics to identify user experience patterns
- It should be compact and not be heavy or not occupy excessive RAM
- It should follow strict authentication, privacy and security features
- The pages should not be heavy and load quickly
- It should support real time information via GPS
- It should enable ease of configuration and change to existing GUIs and support introduction of new screens
- It should have a resolution independent design structure

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**Important Points regarding the mobile application:**

- It is proposed that from the day of Go-Live, the PoCRA platform should be integrated with Mobile / Handheld devices to make the system widely reachable and accessible, especially from remote locations where connectivity is an issue, or from locations where the PC penetration is limited impacting the application accessibility. It is envisaged that in future the usage of mobile / smart phones as well as other handheld devices will increase significantly; therefore, a lighter version of the PoCRA platform must be developed to support browsing on the applications through these devices (all smartphone platforms), and launched simultaneously with the main version on the day of Go-Live.
- The PoCRA platform and Mobile App will allow the users with mobile devices to work on certain modules even when they are offline. It will allow users to synchronize with the system when they are back online. The Supplier will have to build the PoCRA platform and mobile apps with an end-to-end **MAM** (Mobile Application Management) functionality. The MAM solution should provide the ability to remotely: control the provisioning, updating and removal of mobile applications. The MAM should consist of features like: Single Sign On, Data Security, App usage restriction based on idle timeout, Push Services, Crash Log Reporting, App Updating, App Version Management, App Wrapping, etc.
- Additionally, it is proposed that PoCRA on field staff will be provided with PDAs / TABs as per PoCRA PMU Requirements. To monitor, manage, secure and support these devices, the Supplier will have to provide **MDM** (Mobile Device Management) functionality. The MDM implementation should be deployed through Central remote management. It should allow an administrator to use an administrative console to update or configure any one handset, group or groups of handsets. The MDM implementation should also use the Open Mobile Alliance (OMA) specified platform-independent device management protocol called OMA Device Management.
- The applications needs to be integrated with the MSDG framework so as to enable the users of the application to access the services over their mobile devices and all smart phones (all smartphone platforms.) This integration would support the two-way communication between the Application and the MSDG. There also needs to be specific keywords defined in the MSDG framework for specific services provided by the PoCRA. These keywords would be used by the users of the PoCRA services while accessing those services via SMS. All necessary requirements for integration will be carried out by the Supplier.

#### 4.1.8 Approach for Satellite Data Procurement

PoCRA has decided to procure the satellite data in phased manner to optimise the satellite data requirement and sources. Bidder need to add the cost of satellite data for Phase -0 (Development phase and Phase-1 (One year from Go live date).

##### I. Proposed Stages of procurement of Satellite data

The table below depicts the phases of procurement of satellite data, the area for which the data would be procured in each phase, and the duration for which data would be procured for the specified area:

<b>Project Phases</b>	<b>Area</b>	<b>Duration</b>
Phase 0	5 Clusters (400 Sq. KM –Area covered under PoCRA Project)	0-1 Years (UAT Stage)
Phase 1	2 District [24277 Sq. KM ](Yavatmal, Beed)	1 Year Post Go Live
Phase 2	15 Districts (1,28,000 Sq. KM)	2-3 Year Post Go Live
Phase 3	Full State (3, 07,713 Sq.KM) Beyond Project Scope. As per the Need of Agriculture Department	Beyond Project Scope

- Satellite date procurement is planned in staggered way to reassurance of utility of the data and quality and correctness of the advisory by using data
- On successful implementation of required advisory the Satellite data will procure for one year after Operational acceptance for the complete PoCRA area for the remaining period of the project
- Scale up of Project to Phase 2 & Phase 3 depend on the successful implementation and outcome of Phase 0 & Phase 1. PoCRA may ask to scale up the project in Phase2 or Phase -3 after Phase -0 depends on quality of outputs like of advisory and reports.
- Procurement of satellite data methodology will be finalised after one year of successful Operational acceptance separately

#### 4.1.9 IoT Engine for Smart Irrigation

The objective is to promote more efficient ways of using Water Resources in farming using IoT Technologies. The approach is to use drip irrigation method using Smart Irrigation Scheduling System based on control algorithms that function using real-time feedback from sensors embedded in the field. Department has decided to test IoT-based control on Pilot Farms before expanding to a larger scale, few farms are been identified for piloting IoT-based water use. Scale up of the project depend on the successful implementation and outcome of this pilot, as well as on the reduction of associated costsover time.

- Proof of Concept for 50 Farms : 2 probes per Farm
- 25 Farms will be selected in Dehani Project area (Yeotmal District)
- 25 Farms will be selected from Marathwada region (not serviced by the Dehani project, but where farm ponds or wells are provided under PoCRA, or where alternate water sources are available)

#### **1. Smart Irrigation Scheduling system based on Soil Moisture Measurement**

The Smart Irrigation Scheduling system, as shown in graphic below would consists of

1. Wireless Soil Moisture Measurement Sensors
2. 4G communication device to transmit data between Data Collection Node and Cloud
3. LoRa devices to communicate between Sensors and Controllers
4. Microcontroller or PLC Device with GSM/GPRS capabilities for communication between Microcontroller and Data Collection Node
5. Solar Panels with Battery to power the controller
6. A mobile application or SMS delivery system which informs the farmer of the irrigation schedule and executes the process once confirmation is received from the famer
7. Water pump machinery that can be operated via the controller

**The functions of Smart Irrigation Scheduling system would include:**

1. Automatic irrigation schedule based on algorithm and past data collected by the sensors.
2. Alert system via SMS to inform about equipment failures, timing and volume of irrigation.
3. Farmer to able to enquire about irrigation conditions in the farm via SMS facility.
4. Lower carbon footprint and lower running costs by being powered by Solar Energy.
5. Switching ON or Cutting OFF water supply based on soil moisture conditions.
6. Cloud storage of all past data.
7. Central Data Collection Node for each cluster of farms.

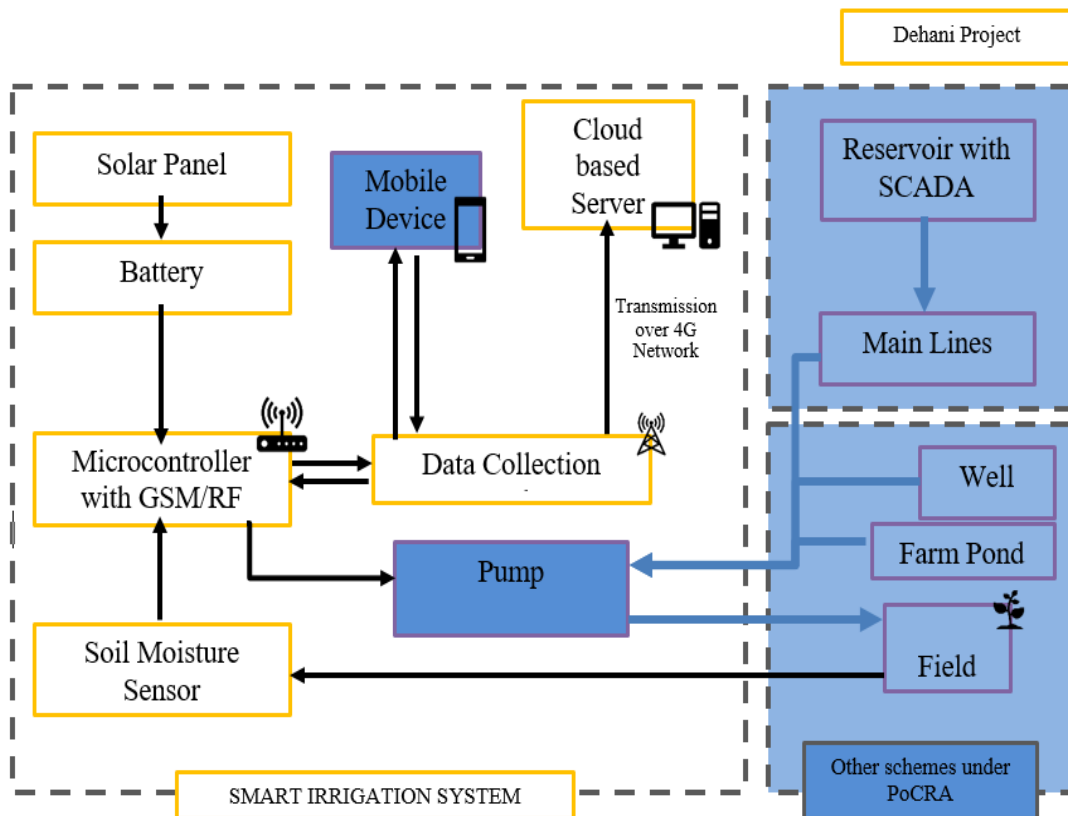


Fig 4.1.8 Diagram of Smart Irrigation Scheduling System based on Soil Moisture Measurement where black lines indicate normal flow of diagram and blue lines indicate flow of water.

	In Scope of Supplier
	Out of Scope of Supplier

## 2. Implementation Plan

The drip system is not part of Supplier's scope. It will be in place via other schemes in the project. The following steps must be carefully conducted while implementing the solution:

- The Soil samples should be collected to calibrate sensors for each field.
- Study of Soil Terrain to estimate the need for various probes placement.
- Check the LoRa frequency bandwidth with the least interference in the area
- Sensors need to be powered and fitted with SIM cards to transmit data using LoRa platform to the Data Collection Node (DCN).
- Sensors are placed in probes of 30cm and 60cm into the field. The placement of probes depends on the make of the field. In special cases where the root of crops goes deep, the probes are of config of 30cm, 60cm and 90cm.
- Find the optimal space for placement of the Data Collection Node for most efficient communication with LoRa and 4G/GSM connection with the cloud. Data Collection Node can be either common for a few fields or can be one for all 50 fields.
- The Data Collection Node is connected to the cloud to create a flow of data stream.
- Water pump mechanism needs to be set up. The number of control valves required for a field need to be ascertained. The drip irrigation system needs to put in place and connected to valve system. The pressure in the main lines need to be ascertained to maximize the efficiency of the drip irrigation system.
- Initial algorithm needs to put in place to create sample irrigation pattern.
- Post implementation of the algorithm the algorithm is adapted periodically based on the sensor data generated in that period.
- The SMS gateway is setup to facilitate control via Farmer's mobile device.
- In case of any faults in the system, the system should take actions only after the farmer gives a confirmation via the application/SMS.
- The Solar power supply system is put in place in addition to connection with line electricity.

## 3. Advantages of using Smart Irrigation Scheduling System

The advantages of using Smart Irrigation Scheduling System are:

1. Prevents Over-Irrigation and Under-Irrigation of Crops. This leads to an increase of the output of the farm in terms of both quality and quantity.
2. The system will considerably reduce the manual/labour effort that is required in a farm for crop cultivation. The automation also helps reduce the strain of crop cultivation on a farmer.
3. The Drip Irrigation system promotes more efficient use of Water Resources by targeting specific areas in the field. In addition, once the drip irrigation system is in place it can be used for more efficient delivery of both fertilizers and water.
4. Due to automation and scheduling the energy required for farming is reduced considerably. In addition, the Solar Powered control system does not add any burden to the traditional energy resources consumed in a farm.
5. The various benefits in labour required, energy consumption and efficient usage of resources leads to a substantial reduction in the cost of cultivation in a farm.



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## **Indicative Specs for Proposed System**

### **1. Sensor**

The sensor to measure soil moisture levels can be of either resistance, capacitive or suction type. Each type has its own merits and demerits and are differently suited for different types of soils. The sensor should be selected according to the required application. It is important that the sensor is low power consuming and can sustain the impact of daily agriculture activities. The sensor should be enclosed to increase the lifespan and durability of the sensor. The sensor should not dissolve in soil. The sensor should not be affected by freezing or hot temperatures. The sensors should not require any maintenance. If the sensors are wireless then they should be able to last the entirety of the pilot project without requiring a change of battery.

The fields will work on two probe systems in case of single crop. In case of multiple crops, the probes can be increased. The sensor placement in each probe should be at depth levels of 30cm, 60cm and in case of crops where the roots are deep an additional sensor is placed at 90cm. They should be able to isolate the differential in moisture levels at the three positions.

Sensor: Tensiometer, Resistance based transducers, Capacitive based transducers, Soil suction sensor

### **1. Controller**

The controller can be either a Microcontroller or a PLC device. The controller should support ports for a RF/GSM Module, 4 to 12 Sensors and minimum of 3 valves. The controller should be low power consuming to be able to run on Solar powered battery.

Microcontroller: 8051+ Based, PIC based, Arduino based etc

### **2. RF Module/GSM Module/LoRa Module**

The RF/GSM/LoRa module is to create connectivity between sensors (if wireless) and controller, and between controller and Data Collection node. Depending on the distance between the above the module should be able to transmit data between the nodes without any loss in the data. The areas need to be assessed to analyze the frequency bandwidths most suited to the area. The area size will also be used to decide the number of modules and relays if required.

### **3. Solar Panels**

Based on the power requirements of the sample sensors and controllers the following is required to make the system run on Solar Energy or battery backup required to provide the power to system

The above specifications can change based on the type and wattage of the controller and valve system being used

#### 4.1.10 Sample Reports

The table below provides the sample reports / advisory to the Farmers and Agriculture department and is not limited to the mentioned list.

<b>Sample Reports / Advisory to Farmers and Department</b>		
<b>Sr.No.</b>	<b>Advisory to Farmers at Village level (Weekly)</b>	<b>Reports to Department (Weekly)</b>
1	When to Sow (Sowing Date by crop)	Sown Area
2	Crop Protection measures	Damage / Disaster Area
3	What to Sow at village level	Crop Health
4	Crop Surveillance	Yield Estimate and Yield Modeling
5	Early disaster warning	Crop Mapping and Crop Acreages (*Major Crops listed below)
6	Crop Health Management	CCE Application

#### **Outcome of IOT irrigation system**

1	Irrigation scheduling
2	Water Conservation (Save of Water)
3	Increase quality and productivity of Crops
4	Energy Saving due to controlled water supply

#### **Lists of Major Crops**

The table below provides the list of Major crops in the POCRA region.

<b>#</b>	<b>Crops</b>	<b>#</b>	<b>Crops</b>	<b>#</b>	<b>Crops</b>
1	Cotton	11	Jowar / Sorghm	21	Guava
2	Groundnut	12	Bajra	22	Lime
3	Soyabean	13	Maize	23	Mango
4	Sunflower	14	Wheat	24	Pomgranate

#	Crops	#	Crops	#	Crops
5	Safflower	15	Pigeon pea	25	Custard apple
6	Chilly	16	Green gram	26	Banana
7	Capsicum	17	Black gram	27	Sapota / Chikoo
8	Onion	18	Gram	28	Ginger
9	Ladies finger	19	Turmeric		
10	Brinjal	20	Tomato		

## 4.2 Applications Development

The envisaged PoCRA Digital Platform will host a suite of applications to meet the PDOs of this project. The applications would help provide advisory support to the beneficiaries of the project to enhance climate-resilience and improve market linkages to enhance profitability of smallholder farming systems. The applications would also support implementation, monitoring and evaluation of the project to enable efficient service delivery.

The Supplier will also design, build and deploy certain applications as mentioned in the document. The Supplier also has to host, manage and maintain these applications on the PoCRA platform cloud. Apart from these applications, there are certain applications that would be built over the course of time and have to be migrated to the PoCRA platform by the Supplier. Supplier will also implement, configure and host System Software and capabilities needed to host innovative solutions and applications.

The tentative list of applications to be hosted on this platform is as follows:

### **List of applications required to be developed by Supplier through this RFB**

**The Supplier has to develop the applications in two phases as described below and in the implementation schedule**

#### **Applications A:**

1. Watershed Management System
2. Agriculture Extension Services System
3. Farmer engagement and Feedback System
4. Weather Advisory and Warning System
5. Climate Risk Modelling
6. Web Portal
7. Administrative system

**Applications B:**

1. Monitoring and Evaluation system
2. Climate Disaster Management system
3. Financial and Accounts system for PoCRA
4. Mobile Applications

**Application C:****Remaining applications will be developed in future but will be hosted on the same platform by the Supplier:**

1. Agri-Business and Value Chain Management Application: This will be implemented through the change control process.

## 4.2.1 Requirement Study and Analysis

The selected Supplier would be required to study the functioning of PoCRA and the various processes in a manner that will enable the selected Supplier to meet all the requirements of this RFB.

The Supplier may gain an understanding of the requirements of the proposed digital platform through structured questionnaires, interviews with user groups and also by studying the Agriculture and farming policies, schemes, regulation and existing applications and databases. The Supplier shall analyse these requirements to ensure the requirements are complete, accurate, consistent and unambiguous.

On understanding the FRS and solution requirement, the selected Supplier will be required to suggest additional functionality (over and above that mentioned in this RFB) that may be included design thinking and empathy driven approach in designing the proposed applications and platform to meet the business requirements of PoCRA.

## 4.2.2 Application Development / Customization

- The selected Supplier would be responsible for configuration, customizing, developing, testing, implementing and hosting the portal and applications on cloud. The portal and applications developed would be evaluated against the SRS as approved by the PoCRA PMU
- The applications and portal must comply with all the Guidelines for Indian Government Websites as defined at the following websites: <http://web.guidelines.gov.in/>, <https://egovstandards.gov.in/guidelines> and <http://egovtraining.maharashtra.gov.in/PublicApp/STD/DisplayFile.ashx?ID=34>
- The Applications, Portals and Databases should all be bilingual (English and Marathi).
- The applications, portal and platform should follow leading international open standards like GSMA, IRB, Open XML, XSLT, etc.

- The overall solution should be based on the concept of One Web, i.e. it should be able to render properly on all type of devices of all sizes like Laptops, Desktops, Mobiles, Tablets, etc.
- The selected Supplier will be required to deliver the Platform, Application including Web-portal along with all of the necessary modules, utilities, system drivers and documentation in line with industry best standards, including product updates, technology upgrades and patches to run on the selected operating system(s) and hardware, according to the solution.
- The selected Supplier will have to provision for a separate development and test environment on the cloud. The selected Supplier should procure the development and test environment licenses in the name of the PoCRA PMU for the various tools used by the selected Supplier during the development phase of respective solutions. The test, staging and training environment has to be hosted on the cloud and would be maintained by the selected Supplier and transferred to the PoCRA PMU at the end of the Contract.

### 4.2.3 Proposed Indicative Conceptual Design

The following figure depicts the proposed overview of proposed indicative conceptual design:

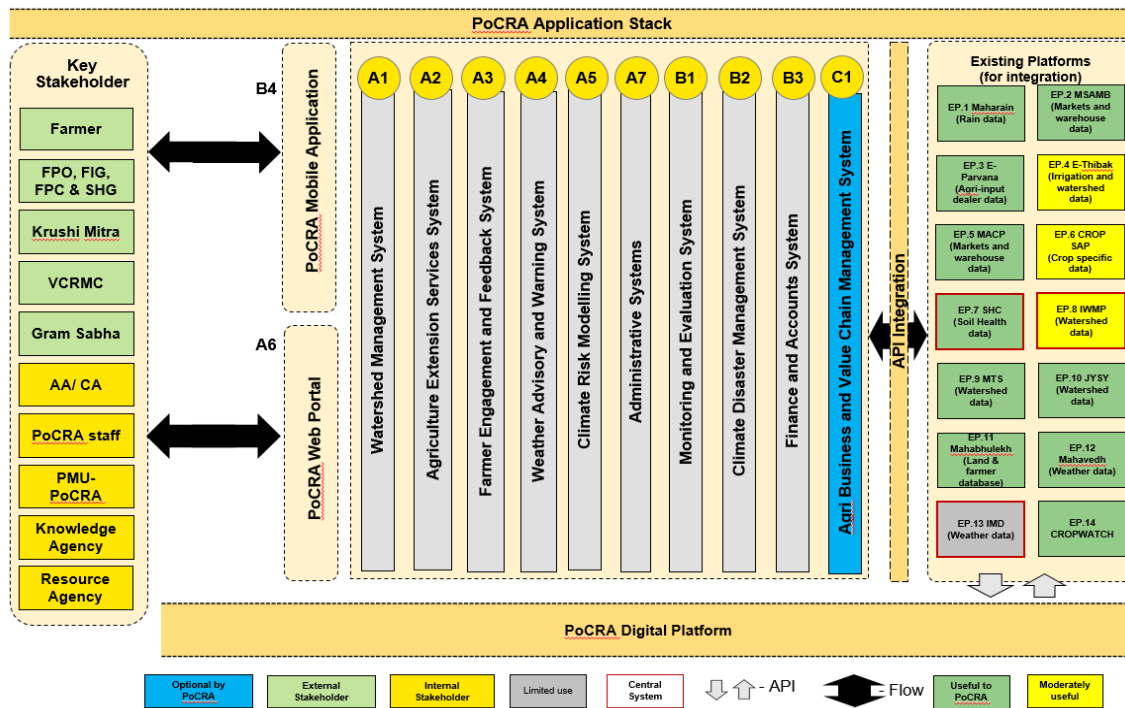


Fig 4.2.1 Conceptual design of PoCRA Digital Platform

**Note:** The Indicative Conceptual Design & PoCRA Digital Platform described above is only suggestive, Prospective bidders will be free to propose their own system architecture as long as it complies with the technological and non-functional requirements specified in the previous sections.

The Broad objective of each application is given below and a detailed FRS of the applications to be built is attached in the Annexure

Sr. No.	Applications	Purpose	Key Features
A1	Watershed Management application	Provides watershed information, development status, PoCRA implementation, training and monitoring for complete PoCRA Region	<ul style="list-style-type: none"> <li>▶ This application enables managing of PoCRA activities for watershed development</li> <li>▶ The functionalities include digital application, case tracking, documentation, approvals and fund flow for PoCRA activities for individual, community and organizations</li> <li>▶ It captures information such as geo-tagging watershed development structures, photograph, digital monitoring and evaluation</li> <li>▶ It enables the development of micro/ mini watershed plans and other watershed development plans at cluster, district and state level.</li> <li>▶ All the data should be available on the integrated GIS platform.</li> </ul>
A2	Agriculture Extension Services Application	Provides efficient way to disseminate agriculture knowledge and information via use of digital tools for complete PoCRA Region	<ul style="list-style-type: none"> <li>▶ This application gives provision for Farmers to view training and FFS calendar and nominate themselves for trainings and FFS</li> <li>▶ It enables farmers to receive timely reminders and alerts about upcoming trainings and trainings happening in their respective vicinity</li> <li>▶ It provides a platform for trainers and trainees to provide feedback on each training and FFS</li> <li>▶ It enables technology dissemination through exposure visits and demonstrations</li> <li>▶ It captures best practices for managing climate shifts, water management, soil management and this information is disseminated to farmers</li> </ul>
A3	Farmer engagement and feedback application	Provides PoCRA stakeholders an opportunity to rate, ask, provide feedback and raise grievances in the application	<ul style="list-style-type: none"> <li>▶ The application has functionalities including alert/reminder mechanisms, exceptions &amp; escalations, geo-tagging, ticketing-service, ratings, analysis and learning algorithms including knowledge and skills recognition.</li> <li>▶ The users include Farmer, Call-center agents, PoCRA functionaries, Vendors, KVK Scientist, Knowledge partners keeping the two-way interactive component of this application in focus.</li> <li>▶ The different channels employed in the application includes web, mobile application, SMS, USSD, IVR, web surveys, Call center, physical documents and Idea management software.</li> <li>▶ The application provides functionalities for integration with other central and state government grievance portals such as Aaple</li> </ul>

Sr. No.	Applications	Purpose	Key Features
			Sarkar ( <a href="https://aaplesarkar.maharashtra.gov.in/en/">https://aaplesarkar.maharashtra.gov.in/en/</a> )
A4	Weather advisory and warning application	Application that is a agro-meteorology and automated data analysis tools, to support accurate weather alerts, warnings, notification and forecasting for complete PoCRA Region	<ul style="list-style-type: none"> <li>▶ This application provides customized weather advisory on a map view using icons, illustrations, graphs and images</li> <li>▶ The application generates notifications, warnings and alerts regarding weather</li> <li>▶ The application has distress/ emergency raising mechanism</li> <li>▶ It provides information related to adaption and mitigation to weather changes</li> <li>▶ Application should use the Satellite data, AWS (Automatic Weather Station data) for Farm based advisory</li> <li>▶ Platform should release the advisory minimum once in week.</li> <li>▶ Advisory will be validated by the technical committee and Supplier need to optimize the algorithm / Application to improve the advisory as per the committee recommendations.</li> </ul>
A5	Climate Risk Modelling	To develop automated crop advisory based on changing weather conditions for complete PoCRA Region	<ul style="list-style-type: none"> <li>▶ The application provides customized weather based crop modelling tool</li> <li>▶ The features include customized crop management, harvest and post-harvest advisory</li> <li>▶ The application provides weather change adaptation and mitigation information</li> <li>▶ It renders information regarding weather, commodity prices, pest and disease attack information, market information, crop management, harvesting and post-harvest etc.</li> <li>▶ It includes the feature of estimating the trend of preference of crop being sown.</li> <li>▶ Supplier need to provide reports like sown area, Acreage, Commodity wise acreage, Yield Prediction, Crop Health Conditions, Crop Disaster etc. every month or as per the mutually agreed periodicity, PMU will also ask more reports as per the data augmentation as per the mutually agreed formats and periodicity.</li> </ul>
A7	Administrative System	Comprehensive Administration for service delivery of PoCRA	<ul style="list-style-type: none"> <li>▶ This application enables the overall control of the application including processes such as profile creation, roles management, desk management etc.</li> </ul>
B1	Monitoring and Evaluation application	Comprehensive monitoring and evaluation tool	<ul style="list-style-type: none"> <li>▶ This application enables capturing near real time geo tagged, photographed and time</li> </ul>

Sr. No.	Applications	Purpose	Key Features
		for PoCRA project	<p>stamped information on the filed activities as fed by the field staff</p> <ul style="list-style-type: none"> <li>▶ It provides dashboards to give a consolidated view of the activities, progress and impact</li> </ul>
B2	Climate Disaster Management	The application will serve as a tool to deal with climate emergencies and disasters - especially sudden onset disasters and extreme events for complete PoCRA Region	<ul style="list-style-type: none"> <li>▶ This application has a feature to detect early warnings and alerts for disasters events</li> <li>▶ It provides for development and deployment of crop contingency and food security plans</li> <li>▶ It delivers the functionality of spatial mapping based on missed call</li> <li>▶ It supports in implementation of trainings to deal with disaster events</li> <li>▶ Need base advisory needs to provide in disaster time as per the requirement of the PMU.</li> <li>▶ Supplier also plan to use UAV to capture the images and data if required on the basis of special permission from PMU.</li> <li>▶ All the advisories will be validated by the Technical Committee and Supplier need to improve the Quality as per the Committee requirements.</li> </ul>
B3	Finance and Accounts System	Disbursements, Beneficiaries, Accounting and Finance	<ul style="list-style-type: none"> <li>▶ This application enables fund management, HR expenditure management, vendor payments, audit and other finance and accounts functions</li> </ul>

The indicative list of system software to be built/configured by the Supplier to host applications on the Integrated Digital Platform is given below.

- **Field data collection software:**

This include the software which will contain the protocols and APIs to transfer data from all the multiple fields and to store on the central cloud-based database.

- **IoT engine**

The IoT engine will include the sensors, data transfer infrastructure and required networks to acquire and transfer data from the field to the cloud.

- **Middleware (including app runtime, proxy, micro services)**

The refers to the software which will enable network-based client requests to connect with the back-end. The infrastructure required for this will also be set up by the Supplier.

- **API gateway**

This refers to the open APIs built in the platform so as to enable integration of other applications both to extract and integrate data and serve as a front end.



- **Data integration**

The Supplier will be responsible for integration and reshaping of data from external sources onto the platform's storage.

- **Rules engine**

The Supplier has to set-up a software component which will allow non-programmers to input, alter or delete business rules and logic. The software must be able to enforce the changes, maintain a repository and flag if there is any conflict.

- **Complex event processing (CEP)**

This piece of software should be able to track multiple data sources in real time so as to analyse events and draw conclusions from them.

- **Learning management system**

This refers to a software application for the administration, documentation, tracking, reporting and delivery of educational courses and training programs.

- **Relational database**

The Supplier will define the data storage schema and set-up the infrastructure and software for appropriate storage, access and querying of data in a relational database.

- **GIS**

This refers to the applications, software and/or tools required to capture, store, manipulate, analyze, manage, and present spatial or geographic data.

- **MIS & Analytics, Big Data**

The Supplier will be responsible for setting up the big data frameworks to store and process large data streams. There will be both business intelligence and analytics deployed on the captured data with suitable output provisioning.

- **Machine learning**

The Supplier will have to create, train and deploy appropriate machine learning models within the big data framework on both batch and streaming data.

- **Grievance management**

This refers to a portal where grievances can be noted and be sent to a suitable stakeholder for remedy. The portal also tracks the grievances to resolution.

- **Call initiation & logging**

There should be a system in place for collection, evaluation and statistical reporting of phone calls.

- **KPI management**

The Supplier will have to select appropriate KPIs and manage the project in accordance with them. These KPIs need to be approved by the PoCRA PMU.

- **SMS gateway**

The Supplier will integrate the SMS gateway into the platform which can process and send automated text messages integrated in the application to the concerned stakeholder.

- **Email gateway**

The Supplier will integrate the Email gateway which can process and send automated emails integrated in the application to the concerned stakeholder.

- **Image recognition**

This refers to software which will contain trained machine learning algorithms to identify a given image for a particular use case.

- **Portal (with SSO), Content Management, Mobile, Social Media integration**

There should be a web-based portal for stakeholder access. It should be integrable with common social media platforms and should serve as an end to end solution for content management.

- **Identity & Access Management**

There needs to be a governance framework built into the system to regulate data, software and infrastructure access.

- **Monitoring & Administration + Device Management**

The system access should be monitored and appropriate record keeping should be in place for administrative and device management purposes.

- **Syslog**

A system log must be setup to allow separation of software that generates messages, the system that stores them, and the software that reports and analyzes them.

- **IDE**

This refers to the software application to provide an environment for software development.

- **e-Commerce marketplace, Order management, Inventory management**

The Supplier will setup a system for e-commerce which will be integrated to an order and inventory management system with analytics to optimize inventory levels.

- **Document Management System**

This system will be developed to track, manage and store documents and reduce paper. The system should be capable of keeping a record of the various versions created and modified by different users.

- **Workflow/BPM**

The Supplier must integrate the workflows and business processes in the application.

**Interfacing with Internal and External Systems/Agencies:**

The proposed system should be capable of interfacing with internal and external systems/agencies/databases through APIs in order to allow for exchange of data and communication with those systems.

The following is an indicative list of internal and external systems/agencies/databases that the proposed system should be capable of interfacing with. However, there would be additional systems/agencies/databases that PoCRA application would need to interface with

- PoCRA MLP Application
- PoCRA M&E Application
- Maharain (Rain Data)
- MSAMB (Markets and Warehouse data)
- E-parvana (Agri-input dealer data)
- E-Thibak (Integration and Watershed data)
- MACP (Markets and Warehouse data)
- CROPSAP (Crop specific data)
- SHC (Soil health data)
- IWMP (Watershed data)
- MTS (Watershed data)
- JYSY (Watershed data)
- Mahabhulek (Land & Farmer database)
- Mahavedh (Weather data)
- IMD (Weather data)
- Cropwatch
- Or any other application required by the PMU

#### 4.2.4 Testing, User Acceptance Testing (UAT) and Performance & Load Testing

- Once the platform and application development / customization have been completed by the Supplier, the Supplier will thoroughly test the application at their end. Detailed test plans, test cases and test reports will be prepared by the Supplier and then submitted to the PoCRA PMU for approval. The Supplier must carry out Unit Testing, Integration Testing and System Testing as per the PoCRA PMU approved plans and the Supplier must submit all Test-completion reports to the PoCRA PMU after the end of each testing phase.
- Only after the entire functionality, performance and quality-of-service requirements of the solution as mentioned in this RFB or as later approved by the PoCRA PMU during design phase have been tested satisfactorily by the Supplier, will the solution be handed over to the PoCRA PMU for User Acceptance Testing. The Supplier will also have to create a Regression Test Suit for the PoCRA PMU. This will consist of end to end test cases across all the modules of the PoCRA Application. This Regression Test suit needs to be executed following any changes in the system throughout the duration of the contract and its test

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results are to be submitted to the PoCRA PMU. The Supplier will have to also periodically update and refresh the Regression Suit throughout the duration of the contract.

**User Acceptance Testing (UAT):**

- The Supplier will develop the UAT Test plan and a detailed User acceptance procedure. The same would be reviewed and agreed by the PoCRA PMU.
- UAT would be applicable once the entire PoCRA platform is completely ready and all the modules under the Contract are ready and linked.
- The UAT environment has to be hosted on cloud and the test cases have to be created by the Supplier
- For all tests performed by the PoCRA PMU, the selected Supplier will prepare the test reports and submit them to the PoCRA PMU for approval. Defects identified in any round of UAT by the PoCRA PMU would be communicated to the Supplier. The Supplier will do the needful to troubleshoot or resolve the defects and resubmit the application to PoCRA PMU for UAT. This iterative process for UAT will be performed till zero defects are shown by the selected SUPPLIER for the test cases developed.
- Supplier has to provide all required documentation like test cases, test results, test assumptions, traceability matrix, etc.

**Load Testing:**

- The Supplier will develop scripts for performance critical scenarios to test loading conditions on the server. These would be reviewed and agreed by PoCRA PMU.
- The Supplier will also be responsible for gathering the test data, run analytics to understand realistic usage and setting up the infrastructure for these loading tests.
- For all tests, the Supplier will be responsible for monitoring the tests, updating the tests based on latest system build while providing timely reports for each test run to PoCRA PMU.
- In case of any defects or problems found by PoCRA PMU in any test, the Supplier will have to resolve the issue and resubmit the test report. This will be done till no defects are identified by PoCRA PMU.

**Security Testing:**

- The Supplier will be responsible for Web Penetration security audit, External Penetration testing, Mobile Application Security Testing etc. to identify bugs and system vulnerabilities if any.
- The testing would include independent analysis of the networks, simulation of both external and internal hacking scenarios to test the system and devising methods and processes for audit of web portals as well as mobile applications.
- The testing procedures will be reviewed and approved by PoCRA PMU and the Supplier must provide reports of each test.
- Reassessments shall be carried out to ensure successful closure of vulnerabilities.
- Supplier has to carry out the Security audit of the PoCRA Platform STQC/ STQC Certified agency

#### 4.2.5 Implementation and Support

- It is proposed that the selected Bidder would be responsible for handling all the cloud infrastructure as per requirements given in RFB.

#### 4.2.6 Software Documentation

- An indicative list of documentation to be prepared by Supplier is as follows:
- Detailed Design document detailing technical architecture (Platform and Applications)
- Database infrastructure architecture, including cloud, clustering/ mirroring, backup & recovery strategies, defining data structure, data dictionary as per standards laid-down by World Bank/ Government of India/ Government of Maharashtra.
- Detailed System Requirement Specifications (SRS) for the platform, applications and other components and also additional requirements as may be identified in consultation with the PoCRA PMU during the requirement study phase. In case the selected Supplier is enhancing and upgrading the existing application, the selected Supplier is required to prepare the SRS of the existing application to meet the standards specified in this RFB. The SRS approved by the PoCRA PMU will form the baseline for all subsequent phases of platform and application development and deployment from a requirements perspective (e.g. for testing, identifying change to requirements etc.). Detailed Collaboration and class diagrams also to be prepared

#### 4.2.7 Specifications for Application Development

##### 4.2.7.1 Data Warehousing and Analytics

The Supplier would design and build the data warehouse and analytics component on the platform and indicative specifications for the same are as follows:

- The data-warehousing platform should have capability to perform daily incremental load.
- Understanding, mapping and define rules for migration from different sources.
- The infrastructure should have data quality and data profiling capacities.
- Data cleansing techniques should be included to clean data at migration level.
- The tool should be capable to handle extraction, transformation and loading of both structured and unstructured data from various data sources.
- The tool should be robust to build analytical infrastructure with migrated data.
- The migrated data would comprise of transactional data, unstructured data such as text files, images, web files, research documents etc.
- Functionalities such as Map-Reduce and integration with distributed file structure should be present.
- The data-warehousing landscape should be capable to handle huge volumes of data.

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- It should be ideally integrated with data mining tool, which would have capacity for different techniques of statistical modelling.
  - The solution should create a single source of truth by integrating disparate data from multiple sources and use that for analysis.
  - The solution should have built-in, or integrated tools for enterprise grade ETL operations from a large array of traditional and non-traditional data sources and should have high performance transformation capabilities
  - The solution should provide for Data Mining through the use of powerful wizards that can help create complex data mining models quickly and should support simple but rich set of APIs to extend the use of the Data mining models.
  - Proposed solution should have capabilities for online analytical processing.
  - Proposed solution should have embedded Advanced Analytics and statistical tools capable of performing advanced statistical modelling and analysis on data (including but not limited to regressions, ANOVA, clustering etc.)
  - The proposed solution should be capable of search based data discovery.
  - All tools in the solution should comply with same security, access, administration attributes.
  - The solution should have support for Big Data sources. The solution should be able to analyse big data and generate visualizations on the fly, without any performance degradation. Features like generating word clouds or creating network plots are required.
  - It allows for connectivity with proposed RDBMS. Compatibility to leading Operating Systems is must.
  - Solution should have an in-built Backup, Archive, and Restore solution to protect data and ensure availability after System hardware failures, Application failure or corruption, Data corruption or loss, user errors or Disasters.
  - The solution should have the capability to provide refresh-only capability to a user group. The solution should provide a rich set of data mining features that can be used for classification, regression, clustering, detection of outliers and anomalies, feature extraction, association analysis etc.
  - The solution should support information exchange between the data mining component and the Analytics/Data warehouse component so that inputs for data mining can be taken from analytics/Data warehouse component tool and vice – versa on a common user platform.

#### 4.2.7.2 Visualization and Reporting

- The Reporting tool should have robust visualizations such as graphs, charts, and histograms.
- The reporting tool should have slicing and dicing features facilitating ad-hoc management reporting on the fly.
- The reporting tool should have basic statistical modelling properties, so that users can create clusters, regression analysis, and other modelling techniques dynamically.
- The reporting tool should output data in various formats.
- The Reports generated by the system should be made accessible through API or an interface (for portal) to be viewed by the authorized users. The tool should enable different types of users to perform analysis on data across the Enterprise without the need to Subset / sample / create multiple views of data. The interface for the authorized users should be simple with user friendly features such as drop-down list, drag and drop utilities etc., and should be built with focus on users with elementary statistical knowledge.
- DBAs and end users to use a web-based portal to evaluate and understand the state of their system
- The management console should be Web based and should not require any client installation.
- The solution shall provide a common management console to monitor multiple systems in Test, Development, production systems across multiple instances and across locations
- Proposed solution should be capable of seamless integration with leading Office tools both for import and export of data and reports in multiple formats. The solution should allow data to be accessed from any industry standard data source using native connectors. It should also allow data load jobs to be scheduled to automate the process of loading data into the system for Analysis
- Data Visualization tool capable of interactive visualizations. Preference would be given to tools with auto charting facilities.
- The analytics and reporting solution should integrate a market leading Solution should be capable of generating highly formatted, interactive reports/ dashboards with or without parameters. Should also have strong ad hoc report generating capabilities.
- The solution should have the ability to format (page size, row, columns, fonts, colours, tables etc.), allow data manipulation (slice & dice multidimensional data on the fly, pivoting, sorting, ranking, rearranging columns, etc.). The solution should have drill-down capabilities (ability to drill down to various levels of a hierarchy).
- The solution should have the capability of raising exception alarms (e.g. email notification). Should provide for exception reporting (ability to set certain thresholds).
- The solution should have user friendly GUI to allow easy generation of reports and exporting capabilities (ability to export resulting data to other applications such as Excel, Notes, CSV.).
- The solution should have integration capabilities e.g. ability to integrate in existing portal. The solution should be able to publish all the reports on the portal and have the ability to archive reports.
- The solution should be able to distribute reports and also have the ability to save data for later use or to a local PC/laptop or for other users to view. It should support offline viewing. It should be able to send reports electronically to other users.

- The solution should be able to sort/filter without re-querying.
- The solution should have the ability to schedule reports.
- The solution should provide for a browser based interface to view reports

**There can be different types of Analysis. Following are some of the details**

- Statistical Analysis:
- Persona Based Analysis:
- Predictive Analysis and Forecasting

#### 4.2.7.3 Hosting Operations & Maintenance

- The PoCRA Digital Platform would be hosted on the cloud to provide flexibility and scalability in terms of compute and storage requirements of the solution. Additionally, a DR would be hosted on the cloud. The cloud and the DR should follow all the guidelines and criteria of MEITY/ Government of Maharashtra
- Cloud services will be procured from CSP as per the cloud GR circular number 060/3/2017/1 dated 16<sup>th</sup> May 2018, circular Number 060/3/2017/2 dated 19<sup>th</sup> May 2018 & circular number 060/3/2017/3 dated 4<sup>th</sup> Aug 2018 of DIT, Government of Maharashtra. Supplier should follow the latest GR issued by the Government of Maharashtra.
- The Supplier should meet all the security requirements indicated in the IT Act 2000, the terms and conditions of the Provisional Empanelment of the Cloud Service Providers and shall comply to the audit criteria defined by STQC
- The Supplier should be responsible for Managing and Maintenance of all the infrastructure procure under the BOQ including all servers (Production and/or staging and/ or development) to get the optimum output.
- The Supplier should be responsible for the sizing of the required cloud infrastructure, system software and other components needed and determining the specifications of all components in order to meet the requirements of PoCRA project
- The Supplier would be responsible for all system integration services including hosting applications, system software and other components on the cloud
- The Supplier would be responsible for the operations and maintenance of cloud services
- The Supplier will have to provide for the internet connectivity from NOC and network infrastructure required for the PoCRA Digital Platform to manage and maintain the cloud
- Supplier would be responsible for data archival, storage services, security services and administrative services related to the cloud.
- Supplier is also responsible to design and adhere to an agreed Business Continuity Plan (BCP) and Disaster Recovery Plan (DRP).



- Supplier must maintain the infrastructure at DC and DR site on a day-to-day basis. If any system has to be upgraded at DC and DR end, that shall be done by the Supplier. The Implementation Agency shall send the reports of the components listed below:
  - Monitoring of replication status.
  - Lag in replication due to any unforeseen errors.
  - Network monitoring
  - Security monitoring and analysis
  - Reporting if any issue is arising in replication.
  - Daily backup at DC and DR end.
- Supplier should upgrade Application Software/ any licensed software / Database to latest versions of system software for application and database servers as required.
- Supplier has to ensure data backup till the last transaction occurring in the system to ensure enhanced service levels and following RPO and RTO objectives:
  - RPO  $\leq$  2 hours
  - RTO  $\leq$  6 hrs.

#### 4.2.7.4 Application Database

- Database should have perpetual and enterprise wide licenses. They should have proven scalability credentials to cater to any system load.
- Database should be an enterprise Class database with EAL (Evaluation Assurance Level) Security Certification.
- The Database should also support multiple languages including English & Marathi as well as Unicode.
- The database should have an in-built diagnostic and tuning pack to help check the health of the database.

### 4.3 Platform and Application Security

The Supplier will need to comply with the following guidelines for Application security:

- Conduct load testing and security audit of the platform by STQC empanelled agencies every year.
- Build a complete audit trail of all transactions (add, edit and delete) using transaction log reports, so that errors in data, intentional or otherwise, can be traced and reversed. This includes Source IP and timestamp logging for all the transactions as per the requirements of IT Act 2000 and IT Act 2000 amendment 2008.
- Chose the most appropriate level of security commensurate with the value of the function for which it is deployed. This also includes documenting evidence of the security practice adopted along with its considerations.
- Implement data security to allow for changes in technology and business needs.
- Equip the system to handle all exceptions.

- Build the application ensuring that none of the top 10 vulnerabilities listed by Open Web Application Security Project (OWASP) exist in the application. Additionally, the application needs to be developed with the most secure coding practices prevalent in industry.
- Conduct independent code review.
- Get an application security assessment from the CERT-In (the Indian Computer Emergency Response Team) empanelled independent agency before Go-Live.
- Take appropriate steps for database security like Access Control, Encryption and Auditing.
  
- **Separation of environments:** The Supplier must ensure separation of production, test, QA and development or similar environments on the cloud. Developers should only have access to the development environment, unless there is a business need authorized by the PoCRA PMU, for purposes such as troubleshooting a problem that cannot be duplicated in the development environment. In such scenarios too, the access given to developers should be read-only role with minimal privileges and their actions must be audited. The Supplier must create roles proactively, so that when a problem does arise, unnecessary access is not granted as a quick solution.
  
- **Secure configuration:** To properly address database security, the Supplier must deploy tools required to automate the entire secure configuration life cycle. This includes database discovery, security scanning, configuration lock down, automated remediation, etc. Security consideration must be given to the database itself, as well as the surrounding environment, including the underlying operating system and applications. Some of the key areas that should be considered when securing the database by the Supplier are as follows:
  - Default accounts
  - Users and roles
  - Exposed passwords
  - Patching
  - Privileges and permissions
  - Parameter settings
  - Password management
  - Profiles
  - Auditing
  - Listener security

#### 4.4 Integration

- Besides the applications being built by this RFB, the platform will host a suite of applications built by another Selected Supplier or existing applications of department or other agencies.
- The Selected Supplier has to integrate these applications and other components like database to the PoCRA digital platform and support the integration and hosting.
- Integration of Digital Signature
  - The application should be able to integrate with digital signatures/e-signatures (Aadhar Based).
  - The Authorized Signatories of the users will be providing digital signatures to

authenticate certain documents as required by the PoCRA PMU. The Supplier will have to maintain a Digital Signature Library of all the authorized users' signatories if required.

- Integration of Data Services:
  - SMS Gateway  
The Supplier will have to integrate the application to an SMS gateway for PoCRA as a part of the scope of work of this RFB. SMS packs will be procured from cloud service provider as per cloud GR of DIT, Government of Maharashtra. The SMS gateway will need to have the following indicative attributes:
    - Dynamic Sender ID (Six Characters) for sending SMS: Separate sender ID will allow all the respective PoCRA PMU functions to keep their identity.
    - Separate login to separate Directorates: This will help in managing schedule of sending SMS by the respective functions.
    - MIS Reports: MIS reports should reflect all the information related to every single SMS sent along with its date of sending SMS, time at which SMS has been sent, text of the SMS, all the numbers to which SMS has been sent, delivery status (delivered, not delivered, expired, etc.).
  - Unified Communication
    - The Supplier will have to maintain the Office 365, a unified communications solution procured by PoCRA on the cloud. The Supplier must also integrate the solution to proposed PoCRA Digital platform.

## 4.5 System Logs

The Supplier will have to maintain various system Logs to ensure system integrity and effective system monitoring. All application logs need to be maintained by the Supplier for the entire duration of the contract. Out of these, the logs for the most recent two years need to be maintained in active mode. The remaining logs can be maintained in passive mode. The Supplier will have to maintain logs for systems and components like (but not limited to) the following:

- Applications
- Database
- Interfaces with External Systems
- Uniform Communication Platform
- SMS Gateway
- Document Management System
- Content Management

## 4.6 Adherence to Standards

The selected Supplier should ensure that the system complies with defined industry and open standards.

- Compliance with Open standards: The proposed system would be designed based on open standards and in line with overall system requirements, in order to provide for good interoperability with multiple platforms and avoid any technology or technology provider lock-in. The system should adhere to the all open standards guidelines and other guidelines relevant to the project as issued by GoI, DIT GoM.
- Compliance with Standards for State Portal, SSDG and forms Framework: The Supplier while developing the Application shall take cognizance of the technicalities of the State Portal, SSDG and e-forms framework and any other guidelines issued in this regard by the Government. The Supplier also has to ensure that all content of the Department's Portal are as per the State Portal Framework guidelines.
- Compliance with Industry Standards: In addition to above, the proposed solution has to be based on and be compliant with industry standards (their latest versions as on date) wherever applicable. This will apply to all the aspects of solution including but not limited to its design, development, security, installation, and testing. The suggested architecture must be scalable and flexible for modular expansion. It should ensure ease of integration with software / applications developed using common industry standards since the solution may be linked and connected to other sources, (websites, contents, portals, systems of other administrations etc.) there may be loose/tight integration with backend system of other departments depending on individual service processes. The solution architecture should thus have provision to cater to the evolving requirements of the Department.

## 4.7 Training

- The selected Supplier has to provide training for the first year after Go-Live on the usage of PoCRA applications, new business processes and other technology or any other training requirements
- The Selected Supplier will provision to train the master trainers at PoCRA who will then train the staff second year onwards
- The selected Supplier would have to prepare detailed training plans covering at least the trainings to be conducted, targeted audience, location, dates for training, duration and training content. The Supplier should submit the detailed training plan to PoCRA PMU and execute the approved plan
- The Supplier will have to create training material and manuals in English and Marathi. Additionally, Supplier will also create online training modules.
- The training material would be created by Supplier in consultation with the PoCRA PMU.
- The Supplier will create functional training for all applications/ modules that will be used for new induction, transfers and promotions.
- The selected Supplier must ensure that deployed trainers possess needed skills and experience in the specific domains and are fully aware of the deployed systems deployed trainers should be fluent in speaking and writing in English and Marathi.

- The training environment where Master Trainers are provided hands-on training should be an exact replica of the live application allowing entry of dummy data, etc.

## 4.8 Managed Services Requirements

The below are managed services requirements that Supplier should provide to POCRA

### **Backup Services:**

- The Supplier should configure, schedule and manage backups of all the data including but not limited to files, folders, images, system state, databases and enterprise applications as per the policy defined by Meity
- The Supplier should be responsible database backup and restore services
- The Supplier should perform a twice weekly full database backup, with a three times daily backup of database log files
- The Supplier should Monitor and manage backup activity
- The Supplier should Restore the requested data with the objective to initiate a minimum of 95 percent of the total number of restore requests per calendar month within a two hour timeframe for data that can be restored from a local copy;
- The Supplier should retain inactive versions of backed up flat files for 30 days and the last version of a deleted file for 60 days;
- The Supplier should retain database backups for thirty (30) days;
- The Supplier should perform administration, tuning, optimization, planning, maintenance, and operations management for backup and restore;  
Provide and install additional infrastructure capacity for backup and restore, as required and,
- Perform backup on the next scheduled backup window in case of any scheduling conflicts between backup and patch management.

### **Disaster Recovery & Business Continuity Services**

- In addition to the Primary DC, the Supplier is responsible for Disaster Recovery Services so as to ensure continuity of operations in the event of failure of primary data center and meet the RPO and RTO requirements
- During the change from DC to DRC or vice-versa (regular planned changes), there should not be any data loss. There shall be asynchronous replication of data between Primary DC and DRDC and the Supplier will be responsible for sizing and providing the DC-DR replication link so as to meet the RTO and the RPO requirements.
- The Primary DC and the DRC should be in different seismic zones
- In the event of a site failover or switchover, DR site will take over the active role, and all requests will be routed through that site. Application data and application states will be replicated between data centers so that when an outage occurs, failover to the surviving data center can be accomplished within the specified RTO
- The Supplier should conduct DR drill for two days at the mutually agreed periodicity.
- The Supplier should offer dashboard to monitor RPO and RTO of each application and database
- Any lag in data replication should be clearly visible in dashboard and alerts of same should be sent to respective POCRA authorities.

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## 4.9 Change Management Process & Evaluation Framework

- PoCRA recognizes that frequent change is an inevitable part of development and implementation of PoCRA application and its rollout, as well as during the course of the contract period. PoCRA also recognizes that this change may require modification in the systems and re-organizing processes and therefore may have a financial impact. Supplier is required to work with PoCRA and consultants to ensure that all changes are discussed, managed, & implemented in a constructive manner.
- One of the key requirements is that the Supplier will be responsible for providing system availability according to defined service levels. This responsibility includes responsibility to implement upgrades, enhancements, extensions and other changes to hardware and software in order to maintain and extend reliable information systems services and service delivery mechanism. It is important that changes to the computing environment are executed in a standardized & controlled manner in order to mitigate the risk of interruptions to the services during prime access hours and to maintain a repository of knowledge about the current as well changed configurations and status of the computing environment at all times.
- Any changes up to the prototype phase will not be considered as a part of this process. Also, any cosmetic and small functional changes after go-live which do not change structure of application/database will not be considered as a part of this process and will have to be done by lead Supplier without any extra charges.
- This section describes the procedure to be followed in the event of any proposed change to the Agreement, scope of work and SLAs. Such change shall include, but may not be limited to, changes in the scope of services as mentioned under various categories from time to time.

### 4.9.1 Purpose & Objective

The purpose of the Change Management procedure is to control changes to the computing environment. The Change Management procedure seeks to achieve the following objectives:

- To protect the computing environment from uncontrolled changes.
- To minimize the occurrence of unintended side-effects during the implementation of necessary changes.
- To avoid implementation of any change which is not reviewed, approved or analysed.
- To control the impact of changes and to facilitate a seamless as well as efficient service delivery.

### 4.9.2 Change Advisory Board (CAB)

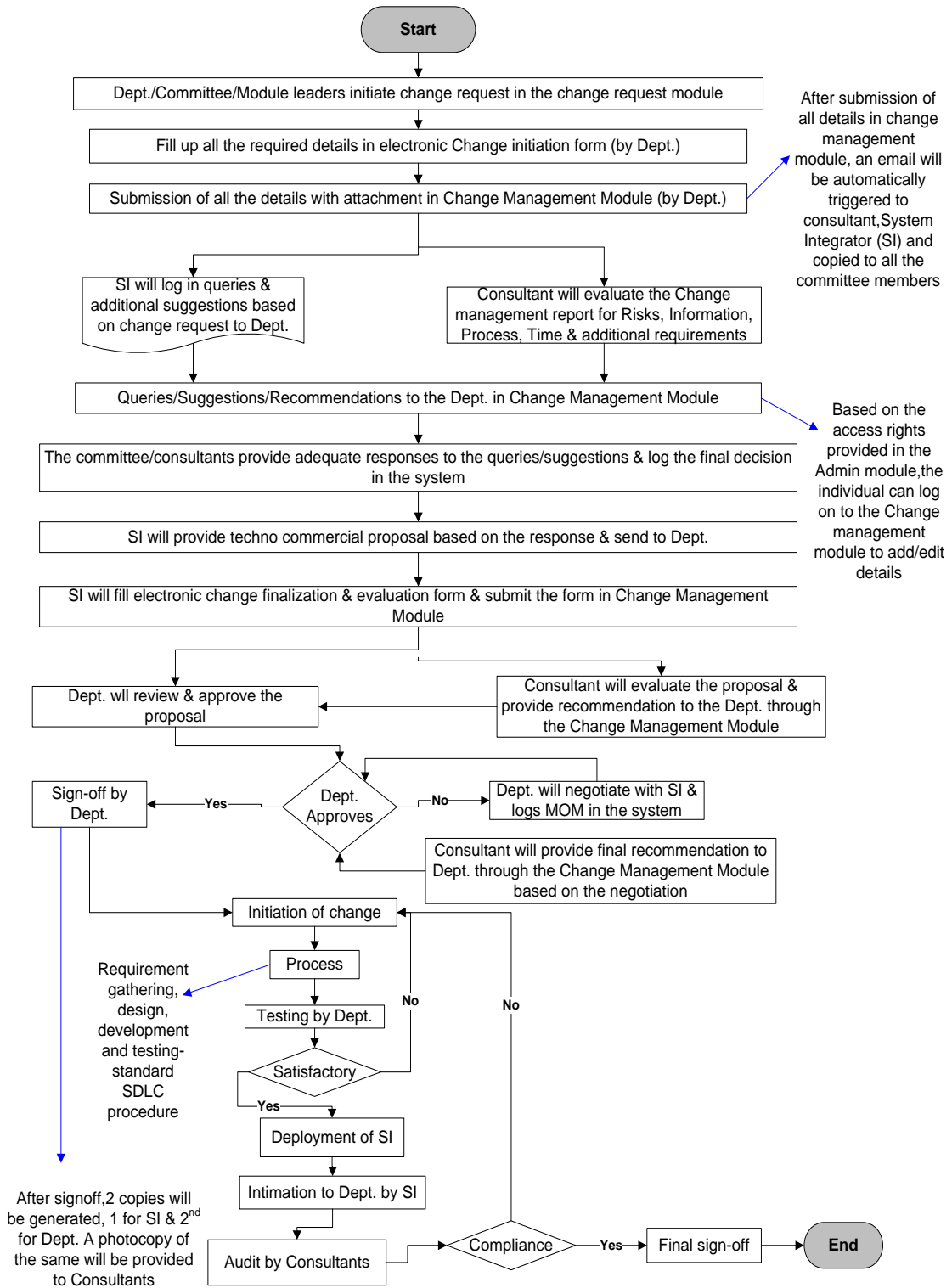
PoCRA is responsible for ensuring that the Change Management guidelines are implemented and maintained. PoCRA will create a committee in consultation with all the module leaders which will act as a Change Advisory Board, may also involve consultants as advisors, to oversee the administration of the Change Management Policy.

The Change Advisory Board is authorized to review, approve and schedule all changes to the computing environment. All decisions of the CAB will be final and binding on all parties involved.

### 4.9.3 Change Management Life Cycle

The life cycle of all changes initiated during the contract period of the Supplier is shown in the flow diagram below:





4.9.4 Process, Timelines & Responsibility Center

The entire change management process will be implemented as mentioned below. The proposed timelines for each steps / activity and the corresponding responsibility centre is also shown in the table below:

Sr. No.	Process	Timelines (Weeks)	Responsibility Center
1	PoCRA / Committee Members / Module Leaders will be able to request changes through the 'change request' module in the system.	NA	Department/ PoCRA PMU
2	Authorised official from PoCRA requesting a change must initiate a request by filling up the electronic 'Change Initiation Form' after logging in with their own credentials.	Immediate	Department/ PoCRA PMU
3	Once the Change request is submitted in the system, an email will automatically be triggered to: <ul style="list-style-type: none"> <li>a) the Consultants</li> <li>b) the Implementation Agency (Supplier) and</li> <li>c) Copy to the department committee members.</li> </ul>	Immediate	NA
4	Consultant will evaluate the change management report for risks, process of evaluating & implementing change, time required for completing the change(s) and any other additional requirement / information needed to clarify the Change; and will provide the recommendations in the change management module by logging with their credentials.	1 week	PMC/ PoCRA officials
5	Supplier will be required to study Change requested and log in their queries / suggestions on the requested change. This will be done by the authorised representative if the Supplier in the Change Management Module.		Supplier
6	The committee/ consultants will discuss and provide adequate responses to the queries / suggestions from the Supplier on the requested change. The committee will further decide on the responses to the queries / suggestions and log the final decision in the system.	1 week	Committee / Consultants
7	Based on the responses provided by the department, Supplier will prepare and submit a techno commercial proposal.		Supplier

Sr. No.	Process	Timelines (Weeks)	Responsibility Center
8	<p>a) The Supplier can submit their Techno Commercial proposal either in hard copy or upload soft copy through the Change Request Module in the system. However, Supplier must submit the details of the proposal in the electronic 'change evaluation and finalization' form in the change management module.</p> <p>b) After submission, an email will be auto triggered to consultants along with a copy to all the committee members. In case hard copy is submitted by the Supplier, department will officially handover the proposal to Consultants for evaluation.</p>	<p>3 weeks</p> <p>Immediate</p>	Supplier
9	<p>a) Consultants will evaluate the techno commercial proposal submitted by Supplier and provide the recommendations to the department.</p> <p>b) The PoCRA PMU will review the evaluation and comments provided by the consultants and decide on the final status. This will be logged in the change management module by authorised representatives.</p>		Consultants / Department/ PoCRA PMU
10	<p>c) If the Department/ PoCRA PMU does not approve the proposal in its entirety, then the department will initiate negotiation with the Supplier based on any of the aspects like cost, time, resources, impact on systems and/or operations and additional parameters, if any.</p> <p>d) Based on the negotiation, the Consultant will submit the final recommendation to the Department/ PoCRA PMU and log the decisions in the change management module.</p> <p>e) If the Department/ PoCRA PMU approves the proposal in its entirety the Change request sign-off between Department/ PoCRA PMU and Supplier will be initiated.</p>	2 weeks	Department / PoCRA PMU/ Consultants
11	During Sign-off, the form will be printed, with all supporting annexures as logged in the system. The authorised signatory from the PoCRA PMU as well as the Supplier will sign the Change Request Evaluation and Finalisation form (at first place) and accordingly a formal go-Ahead will be provided by the department. This form will be signed in two copies; one for the	Immediate	Department PoCRA PMU/ Supplier

Sr. No.	Process	Timelines (Weeks)	Responsibility Center
	Supplier and other for the Department/ PoCRA PMU. Also, a photo copy will be provided to the consultants.		
12	Supplier will then initiate change following a standard SDLC procedure like requirements gathering, design, development and testing, etc. and with proper documentation at each stage.	As required / agreed	Supplier
13	Once the Change is completed as per agreed timelines and specifications, the Department/ PoCRA PMU and the Consultants will do the User acceptance testing and auditing respectively and provide comments / recommendations to the committee members.	2 weeks	Department PoCRA PMU/ Consultants
14	If any further activities need to be carried out as per the recommendations during UAT and Audit, it will be done by the Supplier. After that an Acceptance Certificate will be issued to Supplier by the Department/ PoCRA PMU and instructions for deployment/ implementation, again as per standard deployment plan. This will follow a second sign-off on the 'Change Request Evaluation & Finalisation' Form.	1 week (if required)	Supplier/ Department/ PoCRA PMU
15	Supplier will deploy the changed solution and notify PoCRA and consultants.		Supplier
16	The consultant will finally review and confirm the deployed solution as per agreed standard, specifications and requirements, and provide status to the PoCRA PMU.	1 week	Consultants
17	A final sign off will be done on the 'Change Request Evaluation & Finalisation' Form and completion Certificate will be issued to the Supplier by the department along with a copy to the consultant. A copy of this completion certificate will have to be submitted to the PoCRA PMU along with the invoices for this change implementation.	Immediate	PoCRA PMU/ Department

**Please Note:** One additional week of buffer is proposed to be utilized during the entire Change Management life cycle, except for steps 12 & 15, if required.

#### 4.9.5 Transfer of Confidential Information and Data

The Supplier will on the commencement of and during the exit management period supply to PoCRA the following:

- Information relating to the platform, applications, system software and all other components of this RFB.
- Documentation relating to the PoCRA's Intellectual Property Rights;
- All source data and information of all components
- All-important data and confidential information;
- All current and updated Project data as is reasonably required for purposes of PoCRA or its nominated agencies transitioning the Services to its replacement Supplier or its nominated agencies in a readily available format;
- All other information (including but not limited to documents, records and Agreements) held or controlled by the Supplier which they have prepared or maintained in accordance with the RFB, the Project implementation, and the SLA relating to any material aspect of the Services or as is reasonably necessary to affect a seamless handover of the Project to PoCRA or its nominated agencies or its replacement Supplier.
- Before the expiry of the exit management period, the Supplier shall deliver to PoCRA all new or updated materials from the categories set out above and shall not retain any copies thereof.
- Before the expiry of the exit management period, unless otherwise provided under the Agreement, Department shall deliver to the Supplier all forms of Supplier Confidential Information, which is in the possession or control of the Department or its users.
- At any time during the Exit Management Period, the Supplier shall facilitate training and knowledge transfer for PoCRA and/or any replacement Supplier as reasonably required for understanding the methods of delivery of the Services.

#### **Information Security:**

One of the most critical issues that need to be addressed is the security of the data. This issue further poses a significant risk if the data is sensitive in nature.

##### a) Certification/Compliance:

- ISO 27001 - Data Center and the cloud services should be certified for the latest version of the standards
- ISO/IEC 27017:2015-Code of practice for information security controls based on ISO/IEC 27002 for cloud services and Information technology.
- ISO 27018 - Code of practice for protection of personally identifiable information (PII) in public clouds.
- ISO 20000-9-Guidance on the application of ISO/IEC 20000-1 to cloud services
- PCI DSS - compliant technology infrastructure for storing, processing, and transmitting credit card information in the cloud – This standard is required if the transactions involve credit card payments.

## 5 Service Level Agreements (SLA)

- The SLA's specify the levels of service to be provided by the Supplier to PoCRA. This level is also called the baseline. Any degradation in the performance of the solution and services is subject to levying liquidated damages as specified. The liquidated damages mentioned in this RFB are genuine pre-estimate of damages likely to flow from the breach of timelines and service levels. The liquidated damages mentioned in this RFB are not the sole and exclusive remedies available with PoCRA for any breach and Supplier shall not be relieved from any obligations by virtue of payment of such liquidated damages
- A set of parameters has been identified as key to the successful implementation of the Project. If the performance of the Supplier in respect of any parameter falls below the prescribed tolerance limit, liquidated damages are imposed for the breach. All the payments to the Supplier are linked to the compliance with the SLA metrics specified in this section. During the contract period, it is envisaged that there could be changes to the SLAs, in terms of addition, alteration or deletion of certain parameters, based on mutual consent of both the parties i.e. PoCRA and Supplier

### Definitions

- Non-Working Days refers to all Sundays and public holidays declared by Government of Maharashtra
- Days refers to all working and non-working days (365 days in a calendar year)
- "Scheduled Maintenance Time" shall mean the time that the System is not in service due to a scheduled activity as defined in this SLA. Further, scheduled maintenance time is planned downtime taken after permission of PoCRA.
- "Scheduled operation time" means the scheduled operating hours of the System for the month. All scheduled maintenance time on the system would be deducted from the total operation time for the month to give the scheduled operation time. The total operation time for the systems and applications within the Primary DC and DR will be 24X7.
- "System or Application downtime" means accumulated time during which the System is totally inoperable within the Scheduled Operation Time but outside the scheduled maintenance time and measured from the time a call is logged with the Supplier of the failure or the failure is known to the Supplier from the availability measurement tools to the time when the System is returned to proper operation
- "Availability" means the time for which the services and facilities are available for conducting operations on the PoCRA system including application and associated infrastructure. Availability is defined as:  $\frac{\text{(Scheduled Operation Time - System Downtime)}}{\text{(Scheduled Operation Time)}} * 100\%$
- Helpdesk support is to be provided as per defined in this RFB
- SLAs would be reported monthly. A Service Level breach will occur if the Supplier fails to meet Minimum Service Levels on a monthly basis for a particular Service Level. Root cause analysis (RCA) to be prepared for all cases of breach in SLA's and shared with PoCRA
- However, liquidated damages would be levied every quarter. The percentage of SLA

violation would be the average of monthly SLA measurements for the months in that respective quarter

- Liquidated damages are mentioned as a percentage of certain components of cost. During the Development & Implementation phase, the maximum liquidated damages are capped at 10% of Total Project Value. If the liquidated damages during Development and Implementation phase exceed 10% of the Total project value, then PoCRA reserves the right to terminate the contract.
- During maintenance phase, liquidated damages per quarter are capped at 20% of that quarter's payment.
- If liquidated damages calculations exceed 19% of the quarterly payment for two consecutive quarters, then PoCRA can take appropriate action including termination of the contract and forfeiting of Performance Bank Guarantee. If liquidated damages calculations in any quarter exceed 30% of quarterly payment, then PoCRA can take appropriate action including termination of the contract and forfeiting of Performance Bank Guarantee.
- In case there are successive breaches of SLA's for two quarters, PoCRA can issue show cause notice to the Supplier to explain their non-performance. Also IT Technical Committee meeting may be called wherein Supplier needs to explain the action taken to prevent such recurrences in future. This is without prejudice to other rights of PoCRA

## 5.2 Liquidated Damages and SLA :

The purpose of this Service Level Requirements/Agreement (hereinafter referred to as SLA) is to clearly define the levels of service which shall be provided by the Supplier to the Corporation for the duration of this contract period of the Project

Sr. No.	SLA Parameter	Description	Target	Liquidated Damages								
1	Team mobilization and commencement of work including deployment of Key personnel on site	Deployment of identified key personnel in PoCRA, mobilization of team and commencement of work as per the project schedule	<15 working days	<p>Liquidity damages will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>SLA</th> <th>Liquidated damages as % Total Contract Value (TCV)</th> </tr> </thead> <tbody> <tr> <td>&gt;15 days &amp; &lt;=20 days</td> <td>0.01%</td> </tr> <tr> <td>&gt;20 days &amp; &lt;=25 days</td> <td>0.02%</td> </tr> <tr> <td>&gt;25 days &amp; &lt;=30 days</td> <td>0.05%</td> </tr> </tbody> </table> <p>For each additional day after 30 days, liquidated damages of</p>	SLA	Liquidated damages as % Total Contract Value (TCV)	>15 days & <=20 days	0.01%	>20 days & <=25 days	0.02%	>25 days & <=30 days	0.05%
SLA	Liquidated damages as % Total Contract Value (TCV)											
>15 days & <=20 days	0.01%											
>20 days & <=25 days	0.02%											
>25 days & <=30 days	0.05%											

Sr. No.	SLA Parameter	Description	Target	Liquidated Damages								
				0.01% of TCV will be levied as additional liquidated damages upto 60 days post which the contract will be terminated								
2	Change in named key personnel	Key personnel team deputed on PoCRA project to consist of same members whose names were proposed in the Bid	No Deviation	<p>Liquidity damages will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>SLA</th> <th>Liquidated damages as % Total Contract Value (TCV)</th> </tr> </thead> <tbody> <tr> <td>1 (not including project manager)</td> <td>0.01%</td> </tr> <tr> <td>2 to 4</td> <td>0.02%</td> </tr> <tr> <td>4 to 6</td> <td>0.04%</td> </tr> </tbody> </table> <p>For each additional change, liquidated damages of 0.03% of Total Contract value will be levied as additional liquidated damages. In case the Project Manager recommended for the assignment is changed an additional liquidated damage of 0.02% of the Total Contract Value will be levied. At the time of development phase before operational acceptance, the change in resources will not be accepted. However, during operation and maintenance phase, resources may be changed for sufficient cause with equal or better resource with the prior approval of Purchaser.</p>	SLA	Liquidated damages as % Total Contract Value (TCV)	1 (not including project manager)	0.01%	2 to 4	0.02%	4 to 6	0.04%
SLA	Liquidated damages as % Total Contract Value (TCV)											
1 (not including project manager)	0.01%											
2 to 4	0.02%											
4 to 6	0.04%											
3	Delay in any of the project milestones	Measured as the difference between planned date for the milestone and the actual date of its completion	<10 days	<p>Liquidated damages will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>SLA</th> <th>Liquidated damages as % Total</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>	SLA	Liquidated damages as % Total						
SLA	Liquidated damages as % Total											



Sr. No.	SLA Parameter	Description	Target	Liquidated Damages									
					<table border="1"> <tr> <td>Contract Value (TCV)</td> <td>0.5%</td> </tr> <tr> <td>&gt;10 days &amp; &lt;=15 days</td> <td>1%</td> </tr> <tr> <td>&gt;15 days &amp; &lt;=20 days</td> <td>2%</td> </tr> </table>	Contract Value (TCV)	0.5%	>10 days & <=15 days	1%	>15 days & <=20 days	2%		
Contract Value (TCV)	0.5%												
>10 days & <=15 days	1%												
>15 days & <=20 days	2%												
				<p>For each additional day after 30 days, liquidated damages of 1% of TCV will be levied as additional liquidated damages</p>									
4	Delay in overall Go-live date	Measured as the difference between the planned date for the Go-Live and the actual date of Go-Live	<30 days	<p>Liquidated damages will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>SLA</th> <th>Liquidated damages as % Total Contract Value (TCV)</th> </tr> </thead> <tbody> <tr> <td>&gt;30 days &amp; &lt;=40 days</td> <td>0.1%</td> </tr> <tr> <td>&gt;40 days &amp; &lt;=50 days</td> <td>0.25%</td> </tr> <tr> <td>&gt;50 days &amp; &lt;=60 days</td> <td>0.4%</td> </tr> </tbody> </table> <p>For each additional day after 60 days, liquidated damages of 0.2% will be levied as additional liquidated damages</p>		SLA	Liquidated damages as % Total Contract Value (TCV)	>30 days & <=40 days	0.1%	>40 days & <=50 days	0.25%	>50 days & <=60 days	0.4%
SLA	Liquidated damages as % Total Contract Value (TCV)												
>30 days & <=40 days	0.1%												
>40 days & <=50 days	0.25%												
>50 days & <=60 days	0.4%												
5	Availability of the PoCRA digital platform along with all applications through internet	<p>Availability of all functionalities for at least 99.6% of time</p> <p>Measured on monthly basis for a 24x7</p>	>=99.6%	<p>Liquidated damages will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>% Availability</th> <th>Liquidated damages as % of quarterly payments of Operations &amp; Maintenance Phase</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> </tr> </tbody> </table>		% Availability	Liquidated damages as % of quarterly payments of Operations & Maintenance Phase						
% Availability	Liquidated damages as % of quarterly payments of Operations & Maintenance Phase												

Sr. No.	SLA Parameter	Description	Target	Liquidated Damages										
				<table border="1"> <tr> <td>&lt;99.6% &amp; &gt;=99%</td> <td>1% {(99.6 – Achieved SLA) / 99.6} * 100</td> </tr> <tr> <td>&lt;99% &amp; &gt;=98%</td> <td>2% {(99 – Achieved SLA) / 99} * 100</td> </tr> <tr> <td>&lt;98% &amp; &gt;=97%</td> <td>4% {(98 – Achieved SLA) / 98} * 100</td> </tr> </table> <p>For each additional drop of 1% in performance below 97%, 3% of Quarterly payment of Operations &amp; Maintenance will be levied as additional liquidated damages.</p>	<99.6% & >=99%	1% {(99.6 – Achieved SLA) / 99.6} * 100	<99% & >=98%	2% {(99 – Achieved SLA) / 99} * 100	<98% & >=97%	4% {(98 – Achieved SLA) / 98} * 100				
<99.6% & >=99%	1% {(99.6 – Achieved SLA) / 99.6} * 100													
<99% & >=98%	2% {(99 – Achieved SLA) / 99} * 100													
<98% & >=97%	4% {(98 – Achieved SLA) / 98} * 100													
6	Helpdesk Support	As per the guidelines of agreement of DIT, Government of Maharashtra	100%	As per the guidelines of agreement of DIT, Government of Maharashtra										
7	Advisory: Delay in issue of advisory (Any one advisory)	Supplier has to release the Weather, Crop Health, Crop Disaster Management advisory every week.	< 2 times in quarter	<p>SLA Penalties will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>Advisory</th> <th>SLA Damanges as % of quarterly payments of operations &amp; maintenance phase</th> </tr> </thead> <tbody> <tr> <td>&lt;3 &amp; &gt;=2</td> <td>0.5%</td> </tr> <tr> <td>&lt;4 &amp; &gt;=3</td> <td>1%</td> </tr> <tr> <td>&lt;6 &amp; &gt;=4</td> <td>2%</td> </tr> <tr> <td>&gt;6</td> <td>3%</td> </tr> </tbody> </table> <p>For delay of each additional acceptable advisory or part there of after 6 times, 1% of Quarterly payment of Operations &amp; Maintenance cost will be levied as additional penalty damages.</p>	Advisory	SLA Damanges as % of quarterly payments of operations & maintenance phase	<3 & >=2	0.5%	<4 & >=3	1%	<6 & >=4	2%	>6	3%
Advisory	SLA Damanges as % of quarterly payments of operations & maintenance phase													
<3 & >=2	0.5%													
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>6	3%													

Sr. No.	SLA Parameter	Description	Target	Liquidated Damages										
8	Advisory: Quality of Advisory	Supplier has to release the Crop Advisory, Crop Health, Crop Disaster Management advisory every week.	> 80% Quality of Advisory	<p>SLA Penalties will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>Quality of Advisory</th> <th>SLA Damages as % of quarterly payments of operations &amp; maintenance phase</th> </tr> </thead> <tbody> <tr> <td>&lt;80% &amp; &gt;=70%</td> <td>0.5%</td> </tr> <tr> <td>&lt;70% &amp; &gt;=60%</td> <td>1%</td> </tr> <tr> <td>&lt;60%</td> <td>5 %</td> </tr> </tbody> </table>	Quality of Advisory	SLA Damages as % of quarterly payments of operations & maintenance phase	<80% & >=70%	0.5%	<70% & >=60%	1%	<60%	5 %		
Quality of Advisory	SLA Damages as % of quarterly payments of operations & maintenance phase													
<80% & >=70%	0.5%													
<70% & >=60%	1%													
<60%	5 %													
9	Submission of Report: Delay in submission of report	Supplier has to release mutually agreed report every month or as per the mutually agreed periodicity	< 2 times in quarter	<p>SLA Penalties will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>Report</th> <th>SLA Damages as % of quarterly payments of operations &amp; maintenance phase</th> </tr> </thead> <tbody> <tr> <td>&lt;3 &amp; &gt;=2</td> <td>0.5%</td> </tr> <tr> <td>&lt;4 &amp; &gt;=3</td> <td>1%</td> </tr> <tr> <td>&lt;6 &amp; &gt;=4</td> <td>2%</td> </tr> <tr> <td>&gt;6</td> <td>3%</td> </tr> </tbody> </table> <p>For delay of each additional acceptable report or part there of after 6 times, 1% of Quarterly payment of Operations &amp; Maintenance cost will be levied as additional penalty damages.</p>	Report	SLA Damages as % of quarterly payments of operations & maintenance phase	<3 & >=2	0.5%	<4 & >=3	1%	<6 & >=4	2%	>6	3%
Report	SLA Damages as % of quarterly payments of operations & maintenance phase													
<3 & >=2	0.5%													
<4 & >=3	1%													
<6 & >=4	2%													
>6	3%													
10	RPO <=2 hours			<p>Liquidated damages will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>RPO</th> <th>Liquidated damages as % of quarterly payments of Operations &amp; Maintenance Phase</th> </tr> </thead> <tbody> <tr> <td>&lt;3 &amp; &gt;= 2</td> <td>0.5%</td> </tr> <tr> <td>&lt;4 &amp; &gt;=3</td> <td>1%</td> </tr> </tbody> </table>	RPO	Liquidated damages as % of quarterly payments of Operations & Maintenance Phase	<3 & >= 2	0.5%	<4 & >=3	1%				
RPO	Liquidated damages as % of quarterly payments of Operations & Maintenance Phase													
<3 & >= 2	0.5%													
<4 & >=3	1%													

Sr. No.	SLA Parameter	Description	Target	Liquidated Damages								
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<6 & >=4	2%											
11	RTO <= 6 hrs.			<p>Liquidated damages will be levied as per the following table:</p> <table border="1"> <thead> <tr> <th>RTO</th> <th>Liquidated damages as % of quarterly payments of Operations &amp; Maintenance Phase</th> </tr> </thead> <tbody> <tr> <td>&lt;7 &amp; &gt;= 6</td> <td>0.5%</td> </tr> <tr> <td>&lt;8 &amp; &gt;=7</td> <td>1%</td> </tr> <tr> <td>&lt;10 &amp; &gt;=8</td> <td>2%</td> </tr> </tbody> </table> <p>For delay of each additional hour or part thereof after 10 hours, 1% of Quarterly payment of Operations &amp; Maintenance cost will be levied as additional liquidated damages.</p>	RTO	Liquidated damages as % of quarterly payments of Operations & Maintenance Phase	<7 & >= 6	0.5%	<8 & >=7	1%	<10 & >=8	2%
RTO	Liquidated damages as % of quarterly payments of Operations & Maintenance Phase											
<7 & >= 6	0.5%											
<8 & >=7	1%											
<10 & >=8	2%											

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## 6 General Requirements

### 6.1 Project Management and PMO Support

- The selected Supplier needs to deploy a full-time Project Management team with a “Project Manager” who would be a single-point contact for the Department for monitoring day-to-day progress on the Project. The Project Manager, should be stationed full-time at PoCRA HO till six months after the time of Project Go-Live at least. The Project manager would be required to interact regularly with the PoCRA PMU to address issues or provide updates in Project progress.
- Selected Bidder has to deploy minimum eight resources full time during the complete project period at PoCRA NOC to develop the advisory and maintain the IT platform.

### 6.2 Licensing Requirements

- All system software, licenses, etc. have to be procured in the name of PoCRA
- The licenses should be perpetual and enterprise wide for the core application (including Web-portal) and other software unless otherwise stated. The software licenses shall not be restricted based on location and the PoCRA PMU should have the flexibility to use the software licenses for other requirements, if required.
- The Supplier should provide 2 user development environment licenses in the name of PoCRA for the various tools used by the Supplier during the development phase of respective solutions.

### 6.3 Knowledge Transfer

- At the end of the Contract period, the selected Supplier will be required to provide necessary handholding and transition support to PoCRA staff or any other agency that is selected for maintaining the system post the Contract with the selected Supplier. The handholding support will include but not be limited to, conducting detailed walkthrough and demonstrations for the IT Infrastructure, handing over all relevant documentation, addressing the queries/clarifications of the new agency with respect to the working / performance levels of the infrastructure, conducting training sessions etc.
- Knowledge Transfer is an integral part of the scope of work of the selected Supplier. This will have to be done even in case the Contract with the Supplier ends or is terminated before the planned timelines.

## 6.4 Integration with other applications

- Supplier would be responsible for integrating the system to other third party applications being built and migrating these to the PoCRA platform and cloud. Supplier would also be responsible for integrating with existing state and central government applications
- Supplier need to support to integrate the third-party applications developed for PoCRA in IT Platform and those application will integrate with API to access the masters and data sets.

## 6.5 State wide extension of PoCRA Platform and applications

On successful implementation of platform and application of Department of Agriculture may ask Supplier has to extend the same platform for the state-wide rollout. Department may ask Supplier this scope through Change request method. Supplier needs to rollout all the all or partially selected services of this platform for the state-wide rollout. Supplier also has to maintain the synergy between other solution provided of PoCRA or Department of Agriculture, Government of Maharashtra.

## 6.6 Preprocessing of Satellite Data

Supplier will pre-process the satellite data procured by Supplier or procured by PoCRA or PoCRA nominated agency. Though Supplier will provide the data and generate advisory and reports for Phase- 0 and Phase-1, PoCRA may ask Supplier to pre-process the data procured by PoCRA for other geographical area.

Pre-processing requirement of images will be mutually agreed terms and condition but following are minimum preprocessing requirements

- Satellite Data Selection
- Daily Satellite data downloading (Through browser/Subscription)
- Weekly Cloud Free Composite
- Atmospheric Corrections
- Dark Object Subtractions
- Radiometric Correction
- Geometric correction
- Image to Image rectification
- Resampling
- Sun angle elevation correction
- Cloud Masking
- Spectral indices generations ( NDVI/NDWI/LSWI/VCI/ SASI etc)
- Temporal profile generation
- Stacking of multi-temporal images
- Mosaicing by DN balancing
- Non crop Masking
- FCC generation
- Clipping as per AOI

Note:

- Supplier will procure the satellite data for Phase-0 and Phase-1.
- Supplier need to generate the advisory and report for Phase-0 and Phase-1 and also develop the application and algorithms to generate the advisory and reports for complete PoCRA region.
- Supplier need to pre-process the Satellite data procured by PoCRA , PoCRA Supplier or POCRA nominated third party through change request process

## 6.7 Development of Network Operation Centre (NOC) for PoCRA

The Supplier will have to create a fully functional Network operations centre (NOC) area at PoCRA office in Mumbai to monitor and control the activities of PoCRA. PoCRA will provide sitting space, furniture & power at its office in Mumbai. All other requirements like monitoring terminals, Laptops, Digital wall, and other backup up Power etc. are the responsibility of the Supplier.

The Supplier should also provide and set-up a Video wall size: 3M (width) X1.1M (height) inside the NOC area to render major system dashboards, performance metrics, etc.

- a) Monitoring operations of all backbone links and network devices.
- b) Ensuring continuous operation of servers and services.
- c) Providing quality support for network users.
- d) Troubleshooting of all network and system related problems.



## 7 Available Licenses

- PoCRA will provide licenses of following software/products to the selected Supplier. The Supplier can either use this or provide other system software as required

Sr. No	Component
1	iBPS & OmniDocs Enterprise License on JBOSS Edition
2	OD Web Client and iBPS Web Client
3	OmniDocs Record Management Service & Record Manager Licenses
4	OmniRules, Rule Management System for iBPS
5	iBPS Process Modeler
6	iBPS Simulator Service
7	iBPS Master Table Management Service
8	iBPS & OmniDocs Mobile Service
9	Business Activity Monitoring System
10	OmniAcquire Capture Service Enterprise
11	ADS LDAP Service
12	Upload & Document utility for OmniDocs
13	OmniScan with OCR Add-On Enterprise License
14	File Movement and Tracking Module
15	Dak Movement and Tracking Module

## 8 Implementation Schedule

Sr no.	Description	Timelines (weeks)
1	Detailed project Plan for implementation of project including risk management and mitigation plan	T +2
2	Digital platform sizing and deployment plan	T + 8
3	Design, Deployment and Configuration of PoCRA Digital Platform	T + 14
4	Development of Applications – A	
4.a	Detailed SRS and Prototyping	T + 8
4.b	UAT Testing	T + 20
4.c	Security and load testing	T + 22
4.d	Training and hand holding	T + 22
4.e	Go Live of Applications	T + 24
5	Development of Applications – B	
5.a	Detailed SRS and Prototyping	T + 12
5.b	UAT Testing	T + 30
5.c	Security and load testing	T + 32
5.d	Training and hand holding	T + 34
5.e	Go Live of Applications	T + 36
6	Operational acceptance of Integrated Digital Platform including integration of helpdesk, call centre with deployment of SDK/API	T + 38

Note – T is date of award of Contract

Operations and Maintenance support has to be provided by the Supplier for Phase I and Phase II till complete Operational acceptance of Integrated Digital Platform

QGR (Quarterly Guaranteed Revenue) will start after Operational acceptance of Integrated Digital Platform

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## 1. Introduction

### 1.1. Purpose of the document

The broad purpose of this document is to define the functions and features of Project on Climate Resilient Agriculture (PoCRA) digital platform for executing activities through PoCRA's digital platform

The Functional Requirement Specification describe the functionalities and capabilities of the digital platform. It includes the source data where the data would be fetched from and functional process requirements. Generally, it defines the capabilities and functions that the PoCRA digital platform must be able to perform successfully in order to meet the objectives of the PoCRA digital platform.

### 1.2. Intended audience

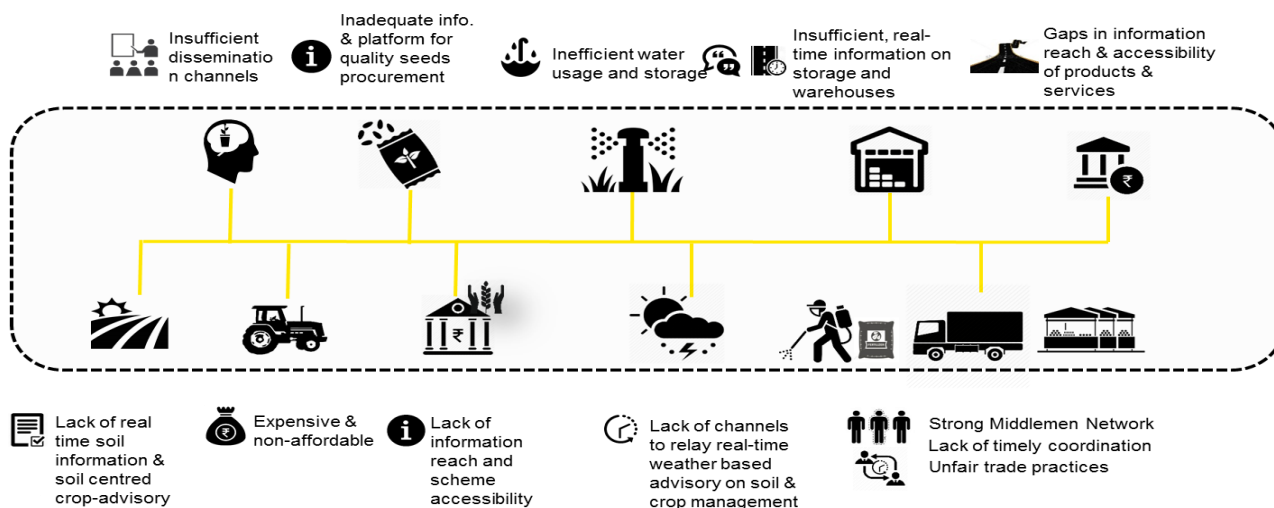
This document may be utilized by the Supplier, owners of the existing systems and applications, agriculture department users and the people who would be doing the UAT (User Acceptance Testing) for the target system. Generally, the intended audience for this documents includes the parties who are going to develop the platform and take up improvement initiatives and execute the project activity.

The FRS for the different applications have been detailed in this document. Each line item follows a nomenclature such that a user-action-object break up of a functionality is listed along with the functional description. Such a mechanism has been used for the convenience of the Supplier such that these descriptions can be filtered to understand the functionality provided to each user and other combinations as desired.

### 1.3. Background

Maharashtra's agriculture is dominated by small and marginal farmers with an average farm size of 1.44 ha. Most of the agricultural production is rain-fed, with less than 20 percent of the arable land under irrigation. Farmers in Maharashtra face the following challenges

Figure 1: Key challenges faced by small and marginal farmers across the value chain in Maharashtra



Key Challenges faced by small and marginal farmers across the value chain are

- ▶ Challenge in availability of agri-inputs including seeds, fertilizers, pesticides and water
- ▶ Excess or less use of fertilizers as the soil health of the farm is unknown in real-time
- ▶ Rise in the cost availability of agricultural inputs like seeds, fertilizers, pesticides, water, electricity and diesel, leading to increase in the cost of production
- ▶ As in cost of inputs there is no corresponding rise, or at times even a fall and sharp fluctuations, in the price paid to farmers for their agricultural produce leading to indebtedness
- ▶ Modern farm equipment is expensive or non-affordable
- ▶ Information asymmetry amongst the players in the value chain. Information regarding quality of input, price of commodities, suitability of a product, schedule agriculture practice etc. is low amongst farmers while higher with other stakeholders in the value chain including agri-input dealers, procurement agencies, middlemen, traders etc.
- ▶ Climate change and natural calamities like drought and floods leading to crop failure. Real-time weather information and forecast is limited to only a handful farmers as it is either expensive, obsolete or un-trustworthy.
- ▶ Limited use of modern techniques for storing and maintaining surface and sub-surface water

Besides, in recent years, farmers in Maharashtra have faced challenges with respect to climate change leading to negative impacts on yields and incomes. The yield gaps for several key crops are significant, reflecting the urgent need for a mix of sector policies and investments to promote research on climate-adapted crop-varieties and practices, irrigation for a more efficient on-farm use of water, and extension services for the adoption of climate-resilient agronomic practices and technologies – i.e. for building climate resilience in Maharashtra's farming systems.

The Project on Climate Resilient Agriculture (PoCRA) aims to enhance climate resilience and profitability of 700,000 small (1-2 ha) and marginal (less than 1ha) farmers in 5000 villages across 15 drought and salinity/ sodicity affected districts of Maharashtra. **The Project Development**

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**Objective (PDO) is to enhance climate-resilience and profitability of smallholder farming systems in these selected districts.**

The objective of this project is to provide support on aspects of design, development and implementation of an innovative, integrated, user (including farmer, the primary stakeholder) friendly and robust digital and new media "Platform" (comprising of digital infrastructure, applications for multi-channel service delivery and data analysis). It outline's the digital strategy and implementation plan (including the To-Be reports, strategy on change management, effective citizen service delivery and capacity building) and provide support in bid management and vendor selection.

The digital platform comprises of the following applications

1. Watershed Management application
2. Agri-Business and Value Chain Management application
3. Agriculture Extension Services application for climate resilient production systems
4. Weather Advisory and Warning application
5. Farmer Engagement and Feedback application (Multi-channel access for farmers)
6. Climate Risk Modelling (Farm Level Planning and Risk Management Advice)
7. Climate Disaster Management – Crisis and Humanitarian response
8. Monitoring and Evaluation application

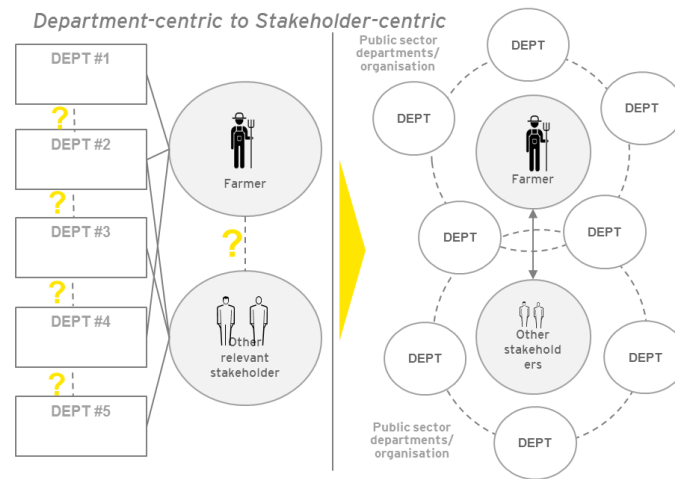
#### **1.4. Our Approach**

For crafting out the approach to the project, it was essential to position the primary stakeholder at the centre of our design process – the small and marginal farmers. An empathy driven approach was adopted during the research process wherein many primary consultations were conducted with the farming communities and field functionaries including observations around the farmer's experiences which has formed the heart of the project. Observations included an in-depth understanding of the farmer's daily struggles, lived realities in the rural areas, information gaps, current assets, agriculture related vulnerabilities, accessibility of public and private services etc. The existing infrastructures, technical dexterity and comfort (ease-of-use), existing network and communication channels were also studied.

#### **Farmer as the main stakeholder**

The existing information and support systems in the agriculture sub-sector were evaluated, and gaps were identified with respect to accessibility, relevance of information and services, user friendliness etc.

It was observed that although many agriculture based web portals and mobile applications existed, they were not being adequately used by the farmers. Some of the reasons include the inability of a single-window solution providing easily accessible, accurate advisory and services considering the local challenges and unpredictability in agriculture. Some of the other limitations included the inability of these existing services to cater to the need of an individual farmer, who could be non-formally educated person and has his/her own farm specific requirements. Others include cluttered information and trust deficit caused by lack of digital literacy.



## 1.5. Methodology & Research

The design strategy incorporated the expectations of a variety of stakeholders who would be the potential users of the PoCRA digital platform. The approach adopted for designing the application functions and processes of PoCRA were to fulfil the broad objectives of the project from an applications perspective. The approach also included the evaluation of the existing systems, knowledge-support providers, existing innovative solutions and scope for feasibility in the project area. This was central in order to understand the capabilities of the solution which would have the potential to meet the needs of the different stakeholders.

With a focus on solution oriented design, it was more important to investigate the complexities that are prevalent. Existing solutions around Climate Smart Agriculture space were explored, including impact assessment of these solutions.

Feasibility of such systems, infrastructure requirements and usability factor were also studied. Ground knowledge of development-sector organisations were explored including technologies relevant in the rural areas.

### Client focus

A major learning of the project was derived out of the discussions in workshops and consultations/meetings with the project PMU and other officials in the agriculture department, wherein solutions were discussed leading to an evolved understanding of PoCRA. With PMU being the primary owners of the digital platform and having experience in governance initiatives in agriculture, it was important to incorporate their learnings into the digital platform design aspects.

### Primary consultations with departments

Many knowledge and support portals of the government for the agriculture sector were studied for their content, relevance, gaps etc. Interaction with the officials of the line department helped frame out the existing knowledge and information that can be subsumed in the PoCRA digital platform.



The department's hierarchy were studied and their alignment with the PoCRA digital platform was consulted, such as ATMA (Agricultural Technology Management Agency).

### **Existing literature**

Research papers and methodologies underpinned by researchers and Research Based Organisations (RBO) were referred during the solution design. The technical approaches and data solutions for climate smart agriculture laid down by the RBOs were studied based on their relevance in the project area. A list of the referred literature has been attached in the annexures, under the reference section.

### **Internal Expertise**

The resources with expertise in different domains helped in exchange of valuable domain knowledge and experiences. The team members varied with different sub-sector experience such as agriculture experts, digital –infrastructure experts, human-development practitioners, GIS experts, Solution Architecture experts etc.

### **Review Workshops and Internal Consultations**

Multiple review workshops were organised with the department staff in order to exchange our understanding of the implementation and design of project components. Ideas around how the different stakeholders/users would participate on the digital platform, their limitations and challenges were discussed and incorporated in the design. These are important operational factors which are vital in defining the success of the project.

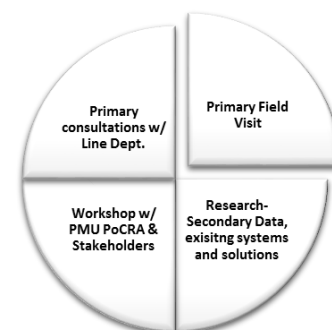
### **Digital platform Resolution**

Farmer: From the point of view of the primary beneficiaries/farmers, the objective was to understand their expectations, pain points and limitations/challenges from a user as well as a digital platforms perspective. It was also imperative to understand the existing ecosystem and channels present at the grass roots level, which could support PoCRA digital platform for data capturing and communications network.

Village level functionaries: From the perspective of Village Level Functionaries the objective was to understand the operational challenges, existing skills and knowledge, work-load and existing communication channels.

Agriculture Department: From the perspective and experiences of the government officials in agriculture department, ATMA, DOA etc. the objective was to understand challenges from a governance point of view, their expectations from the digital platform and systemic challenges.

Startups and Technology corporates: Existing information and services platforms, including existing web/mobile based applications provided by the government and other private agencies were studied. Various market-driven systems and stakeholder operations were also explored keeping the interactive nature and the digital platform's sustainability. Learnings from the existing communication channels and feasibility of a digital channel for transactions have also been incorporated in the digital platforms capabilities.



## 2. Existing systems - State and Central Government Departments

This sub-section outlines the existing programs and/ or digital systems that support the functions of DoA. The relevant applications that were studied have been summarized below. The PoCRA digital platform seeks to integrate with many of these applications as needed, in order to deliver on project objectives. Details related to integration have been explained in the proposed indicative conceptual design, in a subsequent section.

Sr. No.	Programs & Digital application	Key Features	Key Challenges/ Limitations	Agency managing application	Technology
<b>Department of Agriculture</b>					
EP.1	<b>Maharain</b> ( <a href="http://www.maharain.gov.in">www.maharain.gov.in</a> )	<ul style="list-style-type: none"> <li>○ Rain gauges are installed at every circle and the Circle Officer (CO) shares the daily rain data to National Informatics Center (NIC), Pune through SMS.</li> <li>○ Statistical reports are generated around rainfall comparison with actual and expected rainfall.</li> <li>○ Historical rainfall data is also available on the web portal.</li> <li>○ State map is drilled down up to circle-level where data on intensity of rain is available.</li> </ul>	<ul style="list-style-type: none"> <li>○ Rainfall data information is limited to the web-portal.</li> <li>○ The rain-gauge system is manual and not automated.</li> </ul>	<ul style="list-style-type: none"> <li>○ NIC, Pune</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> <li>○ Output available in pdf and excel</li> </ul>

Sr. No.	Programs & Digital application	Key Features	Key Challenges/ Limitations	Agency managin g applicati on	Technology
EP.2	<b>Applications developed for Maharashtra State Agricultural Marketing Board (MSAMB)</b>	<ul style="list-style-type: none"> <li>○ Rates of commodities for 294 main markets and 66 sub-markets are available.</li> <li>○ Buyer-seller e-application for e-auction (now utilized under e-NAM) is available.</li> <li>○ APMC go-downs/ warehouses database is available with the board.</li> <li>○ Mobile application provides commodity and market wise information and other information regarding FPCs, farmer weekly markets and training courses for the farmers.</li> </ul>	<ul style="list-style-type: none"> <li>○ There is limited awareness of the application amongst the stakeholders.</li> <li>○ There is absence of mobile application view customized to the farmers as per their geographic location.</li> </ul>	<ul style="list-style-type: none"> <li>○ Application hosted and managed by MSAMB in house team</li> </ul>	<ul style="list-style-type: none"> <li>○ OS: Linux/windows</li> <li>○ DB : Postgre/ Oracle</li> </ul>
EP.3	<b>e-Parvana</b> ( <a href="http://mahaagriqc.gov.in/">http://mahaagriqc.gov.in/</a> )	<ul style="list-style-type: none"> <li>○ This web site is used for application, renewal, and amendment of licenses for agri-input dealers, manufacturers and distributors.</li> <li>○ The portal has the functionality to search for</li> </ul>	<ul style="list-style-type: none"> <li>○ The facility of regulated agri-inputs stock's updation is not available on the portal.</li> </ul>	<ul style="list-style-type: none"> <li>○ NIC,Pune</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> </ul>

Sr. No.	Programs & Digital application	Key Features	Key Challenges/ Limitations	Agency managing application	Technology
		<p>license and product information.</p> <ul style="list-style-type: none"> <li>○ License validity status and application status can also be checked through SMS.</li> </ul>			
<b>EP.4</b>	<p><b>e-Thibak</b> (<a href="http://mahaethibak.gov.in/ethibak/index.php">http://mahaethibak.gov.in/ethibak/index.php</a>)</p>	<ul style="list-style-type: none"> <li>○ The portal provides functionality for the potential beneficiaries to register and apply for micro-irrigation schemes. It accepts farmer's data such as land record, Aadhaar number, crop data etc.</li> <li>○ It provides the functionality for the agri-officers to approve/reject grants for beneficiaries based on the documents uploaded by the farmers and spot verification conducted by the functionaries.</li> </ul>	<ul style="list-style-type: none"> <li>○ There is no functionality for the agri-assistant for capturing GPS location of the system that is installed during spot-verification.</li> <li>○ Farmers are to submit hard-copies of many documents for seeking approval.</li> </ul>	<ul style="list-style-type: none"> <li>○ NIC, Pune</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> </ul>
<b>EP.5</b>	<p><b>Maharashtra Agriculture Competitiveness Project (MACP)</b></p>	<ul style="list-style-type: none"> <li>○ The project provides data related to warehouses for</li> </ul>	<ul style="list-style-type: none"> <li>○ Absence of an end-to-end integrated web application.</li> </ul>	<ul style="list-style-type: none"> <li>○ Application hosted and managed by</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> </ul>

Sr. No.	Programs & Digital application	Key Features	Key Challenges/ Limitations	Agency managing application	Technology
		<ul style="list-style-type: none"> <li>renovation in the state.</li> <li>○ It provides FPO data base.</li> <li>○ The project provides information of the commodity-specific market prices in different APMCs.</li> <li>○ It provides Agriculture Market Information System (AMIS) forecasting future commodity prices.</li> </ul>		MSAMB in house team	<ul style="list-style-type: none"> <li>○ DB : Postgre/Oracle</li> </ul>
<b>EP.6</b>	<b>CROPSAP</b>	<ul style="list-style-type: none"> <li>○ It is a crop-pest surveillance and advisory project.</li> <li>○ The system supports authentication, survey entry, advisory and report generation, which is supported by third parties such as KVK.</li> </ul>		<ul style="list-style-type: none"> <li>○ NIC, Pune</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> </ul>
<b>EP.7</b>	<b>Soil Health Card</b>	<ul style="list-style-type: none"> <li>○ The web application for reporting centrally sponsored Soil Health Card Scheme assists</li> </ul>	<ul style="list-style-type: none"> <li>○ Consolidated soil correction recommendations are provided instead of crop stage-wise or month-wise</li> </ul>	<ul style="list-style-type: none"> <li>○ NIC, Pune</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> </ul>

Sr. No.	Programs & Digital application	Key Features	Key Challenges/ Limitations	Agency managing application	Technology
		the laboratories to record, report and print soil health cards and helps to monitor target achievements.	<ul style="list-style-type: none"> <li>○ recommendations (State's soil health application supports this feature).</li> <li>○ Uploading results on the web application consumes excessive time.</li> <li>○ Colour coding is deceptive. Parameters that are required to be low e.g. Electro-conductivity of the soil, are coloured red.</li> </ul>		

The activities that support farming and agriculture come under various departments including the Department of Agriculture, Revenue, Soil Conservation and Watershed Management, Land Resources, Ministry of Rural Development etc. These departments have developed multiple digital web platforms and mobile applications to run these activities. These have been discussed below:

<b>Department of Land Resources, Ministry of Rural Development</b>					
Sr. No.	Programs & Digital application	Key Features	Key Challenges/ Limitations	Agency managing application	Technology
<b>EP.8</b>	<b>Integrated Watershed Management Programme - Vasundhara Panlot Vikas</b>	Vasundhara State Level Nodal Agency (VSLNA), Pune is an Agency registered under Society's Registration Act 1860. The VSLNA is responsible for implementation and monitoring of Integrated Watershed Management	<ul style="list-style-type: none"> <li>○ The program captures farmer details, the database of which is available offline but not integrated with the system.</li> <li>○ Village-wise data is not available</li> </ul>	○ NIC, Delhi	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> </ul>

		<p>Programme (IWMP) a centrally sponsored programme in the state of Maharashtra. The VSLNA is assisted by various agencies such as District Watershed Development Units (DWDU) at district level, Project Implementation Agencies (PIA) at taluka level and Watershed Committees (WC) at project level working in the field of watershed development.</p> <p><b>Key features of Bhuvan IWMP-SRISHTI:</b>  <b>Monitoring and Evaluation:</b> It is a web based GIS application (Geoportal) enabling the monitoring and evaluation of IWMP watersheds using satellite remote sensing and sample field data through mobile applications. This Geoportal facilitates M&amp;E of all IWMP watersheds for 10 states and 50 special watersheds in 16 states. The geo-portal provides image and map display, monitoring tools, summary statistics of all the IWMP watersheds. The application enables national, state and district watershed level</p>	<p>online. The online database is watershed-level information and is collated based on offline data records.</p> <ul style="list-style-type: none"> <li>○ The application is limited to Monitoring and Evaluation only and does not support program management tools.</li> <li>○ The application does not support payment through Direct Benefit Transfer.</li> <li>○ Delivery of most of the project/ programs that are digitally enabled are in piecemeal and limited only to Monitoring and Evaluation (M&amp;E).</li> <li>○ Data entry and reporting through digital applications related to watershed development programs (IWMP, JYSY and MTS) are unique to each program. This causes data reporting in 3 separate formats resulting in inefficiency. This is a key factor for convergence.</li> </ul>		
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		access for information and report generation <sup>[1]</sup> Website/ Portal: <a href="http://bhuvan.nrsc.gov.in/projects/iwmp/">http://bhuvan.nrsc.gov.in/projects/iwmp/</a>	<ul style="list-style-type: none"> <li>○ The applications lack back-end integration and integration with other public sector databases.</li> <li>○ Currently, reporting and monitoring of parts or whole of the project is through use of Google forms. (<a href="https://www.google.com/forms/about/">https://www.google.com/forms/about/</a>)</li> </ul>		
<b>Department of planning</b>					
<b>EP.9</b>	<b>Farm ponds on demand (MTS)</b> (मागील त्याला शेततळे)	The objective of Magel Tyala Shettale (Farm Ponds on Demand/ MTS) scheme is to provide farmers with a structure for storage of water. The scheme provides subsidy to build farm ponds for the storage of water in the farm. Farmers can apply for this scheme online through the government of Maharashtra portal. Before applying, farmers are required to decide purpose and quantity of water to be preserved. The farmers can either harvest rainwater or pump water from a seasonal water stream or bore/well. To use rain as the source of water, the location of farm pond has to be approved by agricultural department and the standard size for	<ul style="list-style-type: none"> <li>○ The application does not cover aspects of end-to-end application process, processing and monitoring.</li> <li>○ The application does not support payment through Direct Benefit Transfer.</li> <li>○ Delivery of most of the project/ programs that are digitally enabled are in piecemeal and limited only to Monitoring and Evaluation (M&amp;E).</li> <li>○ Data entry and reporting</li> </ul>	<ul style="list-style-type: none"> <li>○ Application managed by Mahaonline</li> <li>○ Hosted at State Data Center</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> </ul>



		<p>farm pond is prescribed by government.</p> <p><b>Features of the application</b></p> <ul style="list-style-type: none"> <li>○ The website (<a href="https://egs.mahaonline.gov.in/Site/Shetatale">https://egs.mahaonline.gov.in/Site/Shetatale</a>) provides farmers the platform to apply online.</li> <li>○ Site photographs along with documents can be uploaded with the application.</li> <li>○ All ponds are Geo-tagged to enable the monitoring and approval functionality regarding the progress by the department officials.</li> </ul>	<p>through digital applications related to watershed development programs (IWMP, JYSY and MTS) are unique to each program. This causes data reporting in 3 separate formats resulting in inefficiency. This is a key factor for convergence.</p> <ul style="list-style-type: none"> <li>○ The applications lack back-end integration and integration with other public sector databases.</li> <li>○ Currently, reporting and monitoring components of project are done through the use of Google forms. (<a href="https://www.google.com/forms/about/">https://www.google.com/forms/about/</a>)</li> </ul>		
<b>Water Conservation Department</b>					
<b>EP.10</b>	<b>Jalyukt Shivar Abhiyaan</b>	<b>Jalyukt Shivar Abhiyaan</b> is a scheme launched by the Maharashtra government with an objective to make Maharashtra a drought-free state by 2019. The project involves deepening and	<ul style="list-style-type: none"> <li>○ The application does not cover aspects of end-to-end application process, processing and monitoring.</li> </ul>	<ul style="list-style-type: none"> <li>○ Application managed by Mahaonline</li> <li>○ Hosted at State</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> </ul>

		<p>widening of streams, construction of cement and earthen stop dams and nullahs and digging of farm ponds. The mobile app, developed by MRSAC, is used to map these locations. The mapped location can be monitored through this web page. The user will be able to download the application, view instruction manual and view mapping locations along with photographs. District-wise, taluka-wise, work-wise statistics is also available both in tabular and graphics form. The project aims to make 5000 villages free of water scarcity every year<sup>[2]</sup>. The application developed by MRSAC, has four (4) modules namely data entry , mapping activity, statistics and validation</p>	<ul style="list-style-type: none"> <li>○ Delivery of most of the project/ programs that are digitally enabled are in piecemeal and limited only to Monitoring and Evaluation (M&amp;E).</li> <li>○ Data entry and reporting through digital applications related to watershed development programs (IWMP, JYSY and MTS) are unique to each program. This causes data reporting in 3 separate formats resulting in inefficiency. This is a key factor for convergence. The applications lack back-end integration and integration with other public sector databases.</li> <li>○ Update between Jalyukta Shivar Yojana 2.1</li> </ul>	Data Center	
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			<p>and 2.2 versions is cumbersome.</p> <ul style="list-style-type: none"> <li>○ Currently, reporting and monitoring components of project are done through the use of Google forms. (<a href="https://www.google.com/forms/about/">https://www.google.com/forms/about/</a>)</li> </ul>		
<b>Department of Revenue</b>					
<b>EP.11</b>	<b>Mahabhulekh</b> ( <a href="http://www.mahabhulekh.maharashtra.gov.in">www.mahabhulekh.maharashtra.gov.in</a> )	<ul style="list-style-type: none"> <li>○ This web platform captures and updates the land and Property Rights (PR) records.</li> <li>○ It captures various farm-level information including land records, owners name, area, soil type, crops grown, loan information, year-wise crop information, area under the crop as per rabi/kharif, uncultivable land, water source.</li> <li>○ All maps have been digitalized and are available with the Land Record office, Pune.</li> </ul>	<ul style="list-style-type: none"> <li>○ The project has not covered all the district's interactive functionality of a map view. This functionality has been available for only a handful districts.</li> </ul>	<ul style="list-style-type: none"> <li>○ NIC, Pune</li> </ul>	<ul style="list-style-type: none"> <li>○ OS : Linux/windows</li> <li>○ DB : Postgre</li> </ul>
<b>Public Private Partnership</b>					
<b>EP. 12</b>	<b>Mahavedh</b>	<ul style="list-style-type: none"> <li>○ Mahavedh is a Public Private Partnership (PPP) project based on establishing a network of Automatic Weather Stations (AWS). Currently, there is</li> </ul>	<ul style="list-style-type: none"> <li>○ The information provided through these AWSs does not capture some key indicators such as evapo-</li> </ul>		

		one AWS in every revenue circle. The AWS network comprises of an area of 12 square km in lowland and 5 square km in the highland	transpiration (ET).		
<b>Ministry of Earth Sciences</b>					
<b>EP. 13</b>	<b>IMD weather data and forecasts</b>	<ul style="list-style-type: none"> <li>○ The data from IMD provides weather data, advisory and warnings based on forecast data. The services provided by this department include <ul style="list-style-type: none"> <li>▪ Agricultural Weather Services for the rural areas</li> </ul> </li> <li>○ Agromet Advisory services</li> </ul>	<ul style="list-style-type: none"> <li>○ The information provided does not combine field-specific weather data and related crop-advisory.</li> </ul>		
<b>Department of Agriculture</b>					
<b>EP. 14</b>	<b>CROPWATC H</b>	<ul style="list-style-type: none"> <li>○ The application has been developed for reporting weekly crop area that is sown at taluka, division and district level of Maharashtra.</li> <li>○ This also includes information about pest and disease attacks on the crops.</li> </ul>			
<b>Department of Information and Technology</b>					
<b>EP. 15</b>	<b>Direct Benefit Transfer Portal</b>	<ul style="list-style-type: none"> <li>○ The DBT web portal enables the mechanism of fund transfer of subsidies directly to the beneficiary's bank accounts.</li> </ul>	<ul style="list-style-type: none"> <li>○ The department of Information Technology (DIT) handles the DBT workflow, hence this creates a third party dependency.</li> <li>○ The portal would require</li> </ul>		

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			customization as per PoCRA's components		
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### 3. Overview of PoCRA applications over a digital platform

This section provides a bird's eye view of the PoCRA digital platform, its users and their role, proposed indicative conceptual design and features and functions of each application. In the subsequent section the document explains each application in detail along with the functional requirement specifications.

#### 3.1. Purpose of the PoCRA digital platform

The PoCRA digital platform is envisaged to cater to the following two broad objectives:

- ▶ Provide advisory support to the beneficiaries of the project to enhance climate-resilience and profitability of smallholder farming systems
- ▶ Support implementation, monitoring and evaluation of the project to enable efficient service delivery

Besides, the PoCRA digital platform is required to be designed such that it is innovative, integrated, user friendly and robust digital and new media platform comprising applications for multi-channel service delivery and data analysis. The PoCRA digital platform will cater to the following broad themes.

##### **Weather based alerts and crop modelling & advisory**

The PoCRA digital platform is proposed to provide valuable agro-met information, alerts and warnings to the users through a common platform. The digital platform will provide a crop modelling tool which would suggest weather change based crop management, crop diversification and dynamic resource allocation options. It will provide advisory services which will serve three (3) objectives viz. i) Knowledge Dissemination ii) Access to leading practices iii) Stakeholder networking and interaction (knowledge and experience sharing).

##### **Agri Business and value chain management**

The PoCRA digital platform seeks to strengthen linkages between the various actors in the agricultural value chain including small holder producers, agro-input dealers, FPCs, manufacturers/suppliers, warehouse markets, re-sellers etc. The platform supports a seamless two-way interactive portal to provide information and e-commerce services to these actors.

##### **Disaster Management**

The PoCRA digital platform is proposed to provide support to climate emergencies and disasters - especially sudden onset disasters and extreme events. It will strive to provide need based warning system, alerts and management advisory.

##### **PoCRA implementation, monitoring and evaluation support**

The PoCRA digital platform will render holistic implementation of PoCRA activities and cater to process management. It will be an integrated application that provides program managers ability to visualize the status of the program at macro level as well as micro-details using data analysis to monitor the progress of all project activities including watersheds across the project area. Besides, it will assist monitoring of the investments made by the project, its impacts and in turn provide indicator based outcomes.

### 3.2. Users

Sr. No	Users	Descriptions
1.	<b>Beneficiary/ Farmer</b>	<ul style="list-style-type: none"> <li>▶ Small and marginal farmers falling within the 5000 villages across 15 drought and salinity/ sodicity affected districts of Maharashtra</li> </ul>
2.	<b>Krush Mitra (KM)</b>	<ul style="list-style-type: none"> <li>▶ Progressive farmer who is a resident of the POCRA identified village</li> <li>▶ KM would help in mobilization of farmers for activities including FFS (Farmer Field School)</li> <li>▶ There is one Krushi Mitra for every village under POCRA</li> </ul>
3.	<b>Agriculture Assistant (AA)</b>	<ul style="list-style-type: none"> <li>▶ A village level functionary who assists project beneficiaries to outline the technical specifications of project implementation</li> <li>▶ There is one agriculture assistant in every POCRA identified village</li> <li>▶ AA assists the VCRMC in project monitoring and reporting</li> </ul>
4.	<b>Village Climate Resilience Management Committee (VCRMC)</b>	<ul style="list-style-type: none"> <li>▶ The Village Climate Resilience Management Committee (VCRMC) leads the process of planning, preparation and implementation of Village Development Plan (VDP). It is formed during the Mini/ Micro Level watershed Planning (MLP) exercise.</li> <li>▶ The committee prioritizes and selects beneficiaries</li> <li>▶ The committee manages the Vulnerable Groups Fund (VGF)</li> <li>▶ Submits monthly and annual financial reports to PoCRA</li> </ul>
5.	<b>Cluster Assistant (CA)</b>	<ul style="list-style-type: none"> <li>▶ These are cluster level functionaries identified by PoCRA and they overlook project progress as per Mini/ Micro Level watershed Plan (MLP) at a cluster level</li> <li>▶ They monitor activity implementation and completion</li> </ul>
6.	<b>Krishi Vigyan Kendra (KVK)/Scientist</b>	<ul style="list-style-type: none"> <li>▶ The Krishi Vigyan Kendras (KVK) are agricultural extension centers created by Indian Council for Agricultural Research (ICAR) and its affiliated institutions at district level to provide various types of farm support to the agricultural sector</li> <li>▶ These are located at the district level</li> <li>▶ The scientists of KVKs are required to conduct the FFS under PoCRA</li> </ul>

Sr. No	Users	Descriptions
7.	<b>PoCRA Appointed Personnel</b>	<ul style="list-style-type: none"> <li>▶ These are agencies/personnel appointed by PoCRA for implementation of certain tasks</li> </ul>
8.	<b>Sub-Divisional Agricultural Officer (SDAO)</b>	<ul style="list-style-type: none"> <li>▶ Sub-Divisional Agricultural Officer is an existing functionary that would prepare budgets and approve activity invoices for payments</li> <li>▶ The SDAO supervises preparation of monthly, quarterly and annual accounts of the project</li> <li>▶ The SDAO supervises preparation and maintenance of accounting records</li> </ul>
9.	<b>District Superintending Agriculture Officer (DSAO)</b>	<ul style="list-style-type: none"> <li>▶ District Superintending Agriculture Officer at district level is a key person for approval of applications and payment processing. Besides, s/he is responsible for overall management and co-ordination of PoCRA activities at district level</li> </ul>
10.	<b>Project Director – Agricultural Technology Management Agency (PD-ATMA)</b>	<ul style="list-style-type: none"> <li>▶ Project Director – Agricultural Technology Management Agency belongs to the ATMA scheme and supports in various activities of PoCRA</li> </ul>
11.	<b>Agribusiness Specialist – ATMA</b>	<ul style="list-style-type: none"> <li>▶ Agribusiness Specialist – Agricultural Technology Management Agency belongs to the ATMA scheme and would assist in various activities of PoCRA including preparation and review of business plans of FPOs</li> </ul>
12.	<b>Taluka Agriculture Officer (TAO)</b>	<ul style="list-style-type: none"> <li>▶ Taluka Agriculture Officer is based out of taluka. The personnel will help in administration, advisory and operations of PoCRA</li> </ul>
13.	<b>Agriculture Officer (AO)</b>	<ul style="list-style-type: none"> <li>▶ Agriculture Officer will help in administration, advisory and operations of PoCRA</li> </ul>
14.	<b>PoCRA IT PMU</b>	<ul style="list-style-type: none"> <li>▶ PoCRA IT PMU would manage and regulate the PoCRA digital platforms in entirety</li> </ul>
15.	<b>Inspector</b>	<ul style="list-style-type: none"> <li>▶ Inspector is a personnel appointed by DSAO/ SDO for inspection of activity completion if required</li> </ul>
16.	<b>Knowledge Partners (KP)</b>	<ul style="list-style-type: none"> <li>▶ Knowledge Partners include State Agriculture Universities, KVK and other public sector organizations providing domain expertise required for PoCRA operations. Eg. CRIDA, YASHADA, VANAMATI</li> </ul>



Sr. No	Users	Descriptions
17.	<b>District Level Coordination Committee (DLCC)</b>	<ul style="list-style-type: none"> <li>▶ District-level coordination committee headed by district collector for approving various plans including cluster level Detailed Project Reports (DPR)</li> </ul>
18.	<b>Gram Sabha (GS)</b>	<ul style="list-style-type: none"> <li>▶ Existing village level governing body, empowered to approve procurement of goods and works under PoCRA</li> </ul>
19.	<b>Representatives/ Volunteers</b>	<ul style="list-style-type: none"> <li>▶ Representatives/ Volunteers are short term personnel for assistance in framing the MLP</li> </ul>
20.	<b>Vendor</b>	<ul style="list-style-type: none"> <li>▶ Public or private sector goods or service provider complying with the procurement guidelines of PoCRA</li> </ul>
21.	<b>FIG/FPO/FPC</b>	<ul style="list-style-type: none"> <li>▶ A Farmer Producer Organization (FPO) is a legal entity formed by primary producers, viz. farmers, milk producers, fishermen, weavers, rural artisans, craftsmen.</li> <li>▶ A FPO may be a producer company (i.e. FPC), a cooperative society or any other legal form which provides for sharing of profits/benefits among the members. In some forms like producer companies, institutions of primary producers can also become member of PO</li> <li>▶ A Farmer Interest Group (FIG) is a self-managed, independent group of farmers with a shared goal and interest</li> </ul>
22.	<b>Resource Agencies</b>	<ul style="list-style-type: none"> <li>▶ Agencies employed by PoCRA PMU for supporting implementation of PoCRA project. Eg. M&amp;E agencies, MLP preparation agencies etc.</li> </ul>
23.	<b>Bank</b>	<ul style="list-style-type: none"> <li>▶ Banking institution would provide for finance and credit related information on the PoCRA digital platform</li> </ul>
24.	<b>Call Centre Agent</b>	<ul style="list-style-type: none"> <li>▶ A call centre agent is a dedicated resource at the call centre set up by PMU PoCRA to address the complaints, grievances and other issues/questions of various stakeholders</li> </ul>
25.	<b>PoCRA Staff/ PoCRA Functionaries</b>	<ul style="list-style-type: none"> <li>▶ PoCRA staff at gram panchayat, block, district and state level</li> </ul>
26.	<b>DBT System</b>	<ul style="list-style-type: none"> <li>▶ The Direct benefits transfer system of the Government of Maharashtra is a web portal that enables the mechanism of fund transfer of subsidies directly to the beneficiary's bank accounts.</li> </ul>
27.	<b>Department of Agriculture (DoA)</b>	<ul style="list-style-type: none"> <li>▶ Officials of the Department of Agriculture</li> </ul>

Sr. No	Users	Descriptions
28.	<b>Government of Maharashtra (GoM)</b>	<ul style="list-style-type: none"> <li>▶ Officials of the Government of Maharashtra</li> </ul>
29.	<b>Trainer</b>	<ul style="list-style-type: none"> <li>▶ Trainer appointed by the PoCRA PMU in order to provide training services under the project</li> <li>▶ These could include KVK trainers, or PoCRA appointed personnel/agencies</li> </ul>
30.	<b>Trainee</b>	<ul style="list-style-type: none"> <li>▶ These are individuals who would be attending trainings provided under the project</li> </ul>
31.	<b>Host farmer</b>	<ul style="list-style-type: none"> <li>▶ These are the farmers who provide their farm for training purposes under FFS- farmer field school</li> </ul>
32.	<b>Self Help Group (SHG)</b>	<ul style="list-style-type: none"> <li>▶ Self Help Group refers to the members of the SHG</li> <li>▶ SHGs registered under the project area</li> </ul>
33.	<b>System</b>	<ul style="list-style-type: none"> <li>▶ System refers to PoCRA's digital platform</li> </ul>
34.	<b>Helpdesk</b>	<ul style="list-style-type: none"> <li>▶ Helpdesk members would provide in-bound as well as out-bound services to the farmer through Calls/SMS/Video call etc.</li> </ul>
35.	<b>Public Organisation</b>	<ul style="list-style-type: none"> <li>▶ Agencies relevant to PoCRA like CRIDA, YASHDA etc.</li> </ul>
36.	<b>State and Central Government agency</b>	<ul style="list-style-type: none"> <li>▶ Agencies that belong to the state or the central government</li> </ul>
37.	<b>KVK authorised stakeholders</b>	<ul style="list-style-type: none"> <li>▶ KVK appointed personnel for carrying out certain activities on behalf of KVK staff</li> </ul>
38.	<b>PoCRA assigned personnel</b>	<ul style="list-style-type: none"> <li>▶ Personnel that would support PoCRA activities, authorized by PoCRA for a short duration of time</li> </ul>

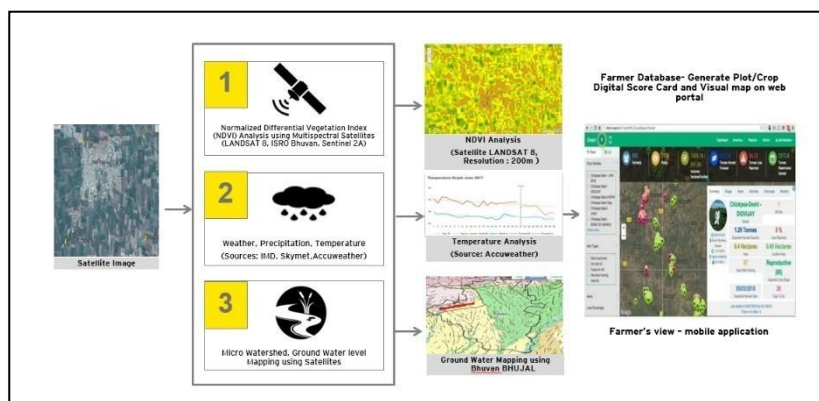
### 3.3. Solution Insight

This section provides an instrumental view of the innovative features of the PoCRA digital platform. It gives a brief description of the functionalities that would come together to deliver on the project development objectives.

With the understanding that agriculture is a data intensive enterprise, especially in the context of climate change and factors of the local geography, the proposed platform is equipped to capture and analyse various data sets in order to churn out meaningful advisory. Backed by the potential of information and communication technologies, the resulting PoCRA digital platform seeks to establish and strengthen networks for the development of agriculture value chains. The combination of these pieces intent to build climate resilience in agriculture and make it a sustainable business enterprise.

The digital platform envisages quality delivery of advisory and support services to the main stakeholder, the farmer. It has been designed to support feeding-in of real-time information from on-ground stakeholders/functionaries and extraction of data from various institutions/programs run by the government. The integrated platform proposes to capture information such as soil health from data of soil health card, localized weather data from AWS (Automatic Weather Stations) and sensors. It attempts to superimpose all these information with crop data through NDVI images, GIS mapped structures such as farm ponds etc. The PoCRA digital platform capabilities include assimilation of complex data backed by analytics and knowledge engine to produce holistic ‘farm-specific’ advisory.

It has been conceptualized that such a platform would be most effective when supported by domain-specific knowledge and learnings from evidence-based data. It is therefore that the project components include training, research and advisory support extended by knowledge partners such as Krishi Vigyan Kendras and Agriculture Universities. Based on real-time localized weather information, the knowledge partners would provide necessary support for building knowledge and

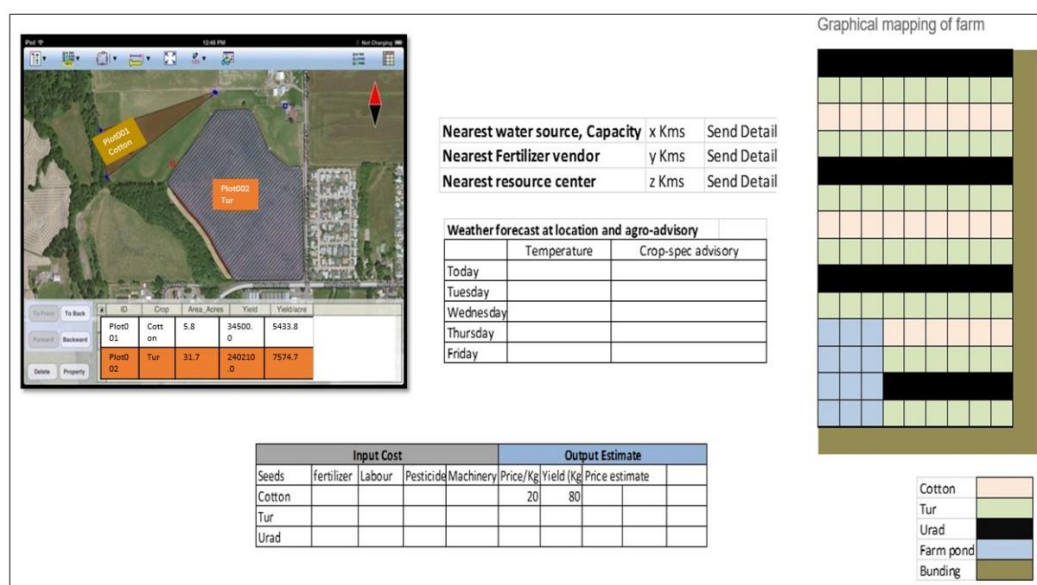


climate resilience in agriculture and help build a climate smart agriculture ecosystem. With functionalities of disseminating advisory and enabling two way interaction through various mediums such as video, text, audio and image, this PoCRA digital platform strives to deliver to the needs and convenience of the individual farmer.

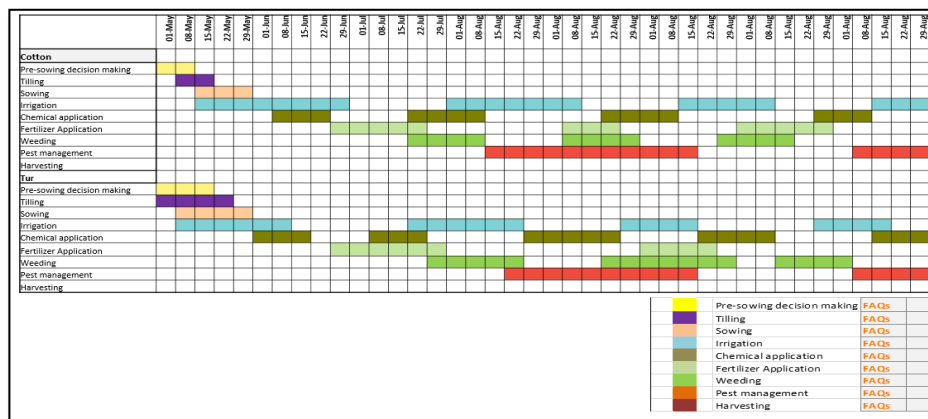
The project understands the need to deliver farmer specific advisory and has introduced an application to seed a unique identification attribute to the farmer to his/her details. It proposes to link farmer’s details including land records (7/12 data) with digital identification records (Aadhaar). This

mechanism would uniquely link the beneficiary with their respective information, which would be reflected in the digital platform. The farm-level data would be integrated with the profile of the PoCRA beneficiary, with geo-tagged/geo-fenced farm along with land information such as the crops grown, size of land, existing structures – farm ponds, micro-irrigation systems etc. With this piece intact, information on the availed benefits/schemes would be updated to the farmer’s profile through the unique profile of the farmer. This would also facilitate a seamless tracking and monitoring mechanism, learnings from which can be fed-back to the PoCRA digital platform for project’s improvisation.

Call-center and helpdesk facilities proposed under PoCRA is an integral part of this project. It would not only extend support to farmers but would also be a key player for their adoption and retention on the digital platform. It is envisaged that the unique link to the registered beneficiary, when further linked to the beneficiary’s telephone number would have the potential to support a PoCRA digital platform that is able to capture on-ground information once a call is made to the call-centre agents. The PoCRA digital platform would be able to extract relevant field-level information and display an integrated map and graphical view on the call-centre agent’s screen. This would include information on the land size, crops sown, nearest water source, its capacity, nearest vendors etc. The knowledge engine at the back end should be able to combine and process weather, soil-health and crop-specific data, so as to produce crop-weather and soil specific advisory to the farmer. The PoCRA digital platform would aim to provide input cost estimates for each crop and an expected realisation based on the recent data on pricing with the nearest mandi prices.



One of the **powerful tools (Application 6)** that would aid in everyday decision making and advisory to the farmer has been anticipated as the ‘crop calendar’. These are crop-specific advisory calibrated according to the local weather, soil and crop specific information, assisting the farmer on each crucial step of nurturing his/her produce. Once the information around crops sown and time of sowing is entered by the farmer, the knowledge engine would create a farm plan and calendar, specific to that crop. The advisories, however, would be tweaked as per the incoming real-time data and accordingly these would be disseminated to the beneficiaries.



Objectives of the PoCRA digital platform include strengthening of linkages between external stakeholders such as product and service providers and the farmer/farmer groups to support efficient and quality delivery of services. The proposed PoCRA digital platform is expected to provide an integrated view of information in real-time backed by a state of the art user experience for the various stakeholders. Functionalities for the stakeholders include updating geo-tagged location, contact information, service/product information, inventory related details etc. This will enable the farmer to search for product/service providers in his/her vicinity, on a map view with information on their contact, services, distance from the farm etc.

This PoCRA digital platform also supports an information cum e-commerce platform which would connect the small food producers to a wide variety of product/service providers. These product/service providers include FPOs, agro-input dealers, manufacturers and suppliers, certification agencies, food-processors, re-sellers etc. This 'buyer-seller' platform would facilitate information sharing and communication thereby assisting in negotiations and transactions amongst the parties. This platform would present the farmer's profile together with information of his/her produce, certification, and expected harvest time, quality and price quotation. The buyer on the other hand, would be able to quote his/her requirements, which the PoCRA digital platform would be able to match with the producer's services and make the information accessible to the buyer. It is envisioned that through this platform the small farmers would get visibility in the market and get better realisations.

Another innovative feature of this PoCRA digital platform includes facilitating the Custom Hiring Centre platform. Through this platform local farmers who own farm machinery would be able to rent-out their machinery, so as to make expensive machinery usable by other farmers. This rent-based model would be adopted in the PoCRA digital platform by GIS location, contact information and service information published by the 'service provider'. This in turn would enable the interested farmers to communicate directly with the service providers and avail these services.

Reduction in the post-harvest losses has been one of the prime focus of this project, where It anticipates a platform for effective post-harvest management. The components of such a platform would support the implementation of schemes for the establishment of on-farm and community level storage, warehouses and packaging centers, thereby promoting village level entrepreneurs. The platform would extend functionalities for mapping the centres, updating their storage information etc. such that these can be accessed by other farmers. Radical strategies such as these would help build local ecosystems and thus be an integral part of contingency plans in times of emergencies.

Another component to strengthen the post-harvest decision making for the small producers is through an information platform on market prices. The platform would provide a map view of all the mandis, displaying current prices, past prices in an easily-interpretable graphical view for each produce. This would inform of the price variations of a particular produce through seasons and locations. The information of the prices- past, current and future would be pulled from relevant government websites.

This new-age ‘innovative platform’ is designed to be compatible with the realities of ground level technical challenges and realises the importance of authentic information exchange. Functionalities of real-time data capture, GIS mapping and offline syncing enable information mapping. The functionalities clubbed with real time weather data, soil health & moisture information along with resource mapping would support quality advisory, monitoring and evaluation for assisting the PMU on policy reforms and better decision making. Multichannel access such as web, mobile, call-center, IVR and kiosks would enable inclusion and participation from variety of stakeholders.

Conclusively, the proposed PoCRA digital platform is a holistic, end-to-end system for assisting and supporting farmers in the implementation of PoCRA activities. Application of M&E, evidence-based planning, feedback and grievance inform and contribute into project improvisation from the perspectives of the primary users. Should the PoCRA digital platform be adopted farmer-wide in the given project area it has the potential to create sustainable livelihoods and enterprise development for small and marginal farmers. The implementation and findings from this project could be used as a case study for projects around climate smart and resilient agricultural systems.

### 3.4. Applications

The following sections lists out a brief on the applications in terms of purpose and key features that it seeks to provide. Please note that each application is extensively detailed in the next chapter.

Sr.No.	Applications	Purpose	Key Features
1.	Watershed Management application	Provides watershed information, development status, PoCRA implementation, training and monitoring.	<ul style="list-style-type: none"> <li>▶ This application enables managing of PoCRA activities for watershed development</li> <li>▶ The functionalities include digital application, case tracking, documentation, approvals and fund flow for PoCRA activities for individual, community and organisations</li> <li>▶ It captures information such as geo-tagging watershed development structures, photograph, digital monitoring and evaluation</li> <li>▶ It enables the development of micro/ mini watershed plans and other watershed development plans at cluster, district and state level</li> </ul>
2.	Agribusiness and Value Chain Management Application	Provides information, market linkages and transaction support for	<ul style="list-style-type: none"> <li>▶ This application enables rendering of information to Farmer such as vendors and their details, agri-inputs, financial institutions, certification and warehouses</li> <li>▶ It provides for a Moderated Public Platform, encouraging knowledge sharing</li> </ul>

Sr.No.	Applications	Purpose	Key Features
		stakeholders in the value chain	<ul style="list-style-type: none"> <li>▶ The users of this application include a variety of internal and external stakeholders such as agro-input dealers, manufacturers/suppliers, warehouse markets, cold storage and packing vendors/centers, financial institutions, certification companies, food processing units/ retail stores/ suppliers/ re-seller/ food markets, FPO/FPC/FIG/SHG, farmers and PMU</li> <li>▶ The application provides a payment gateway support for all users of this application to enable digital transactions, as well as provision for Cash on Delivery(COD)</li> <li>▶ The application provides functionalities for integration with other central and state government portals such as e-Parvana, e-Thibak, MSAMB etc.</li> </ul>
3.	Agriculture Extension Services Application	Provides efficient way to disseminate agriculture knowledge and information via use of digital tools	<ul style="list-style-type: none"> <li>▶ This application gives provision for Farmers to view training and FFS calendar and nominate themselves for trainings and FFS</li> <li>▶ It enables farmers to receive timely reminders and alerts about upcoming trainings and trainings happening in their respective vicinity</li> <li>▶ It provides a platform for trainers and trainees to provide feedback on each training and FFS</li> <li>▶ It enables technology dissemination through exposure visits and demonstrations</li> <li>▶ It captures best practices for managing climate shifts, water management, soil management and this information is disseminated to farmers</li> </ul>
4.	Weather advisory and warning application	Application that is a agro-meteorology and automated data analysis tools, to support accurate weather alerts, warnings, notification and forecasting	<ul style="list-style-type: none"> <li>▶ This application provides customized weather advisory on a map view using icons, illustrations, graphs and images</li> <li>▶ The application generates notifications, warnings and alerts regarding weather</li> <li>▶ The application has distress/ emergency raising mechanism</li> <li>▶ It provides information related to adaption and mitigation to weather changes</li> </ul>
5.	Farmer engagement and feedback application	Provides PoCRA stakeholders an opportunity to rate, ask, provide feedback and raise grievances in the application	<ul style="list-style-type: none"> <li>▶ The application has functionalities including alert/reminder mechanisms, exceptions &amp; escalations, geo-tagging, ticketing-service, ratings, analysis and learning algorithms including knowledge and skills recognition.</li> <li>▶ The users include Farmer, Call-centre agents, PoCRA functionaries, Vendors, KVK Scientist, Knowledge partners keeping the two-way</li> </ul>

Sr.No.	Applications	Purpose	Key Features
			<p>interactive component of this application in focus.</p> <ul style="list-style-type: none"> <li>▶ The different channels employed in the application includes web, mobile application, SMS, USSD, IVR, web surveys, Call centre, physical documents and Idea management software.</li> <li>▶ The application provides functionalities for integration with other central and state government grievance portals such as Aaple Sarkar (<a href="https://aaplesarkar.maharashtra.gov.in/en/">https://aaplesarkar.maharashtra.gov.in/en/</a>)</li> </ul>
6.	Climate Risk Modelling	To develop automated crop advisory based on changing weather conditions	<ul style="list-style-type: none"> <li>▶ The application provides customised weather based crop modelling tool</li> <li>▶ The features include customised crop management, harvest and post-harvest advisory</li> <li>▶ The application provides weather change adaptation and mitigation information</li> <li>▶ It renders information regarding weather, commodity prices, pest and disease attack information, market information, crop management, harvesting and post-harvest etc.</li> <li>▶ It includes the feature of crop sowing sentiment analysis</li> </ul>
7.	Climate Disaster Management	The application will serve as a tool to deal with climate emergencies and disasters - especially sudden onset disasters and extreme events	<ul style="list-style-type: none"> <li>▶ This application has a feature to detect early warnings and alerts for disasters events</li> <li>▶ It provides for development and deployment of crop contingency and food security plans</li> <li>▶ It delivers the functionality of spatial mapping based on missed call</li> <li>▶ It supports in implementation of trainings to deal with disaster events</li> </ul>
8.	Monitoring and Evaluation application	Comprehensive monitoring and evaluation tool for PoCRA project	<ul style="list-style-type: none"> <li>▶ This application enables capturing near real time geo tagged, photographed and time stamped information on the filed activities as fed by the field staff</li> <li>▶ It provides dashboards to give a consolidated view of the activities, progress and impact</li> </ul>



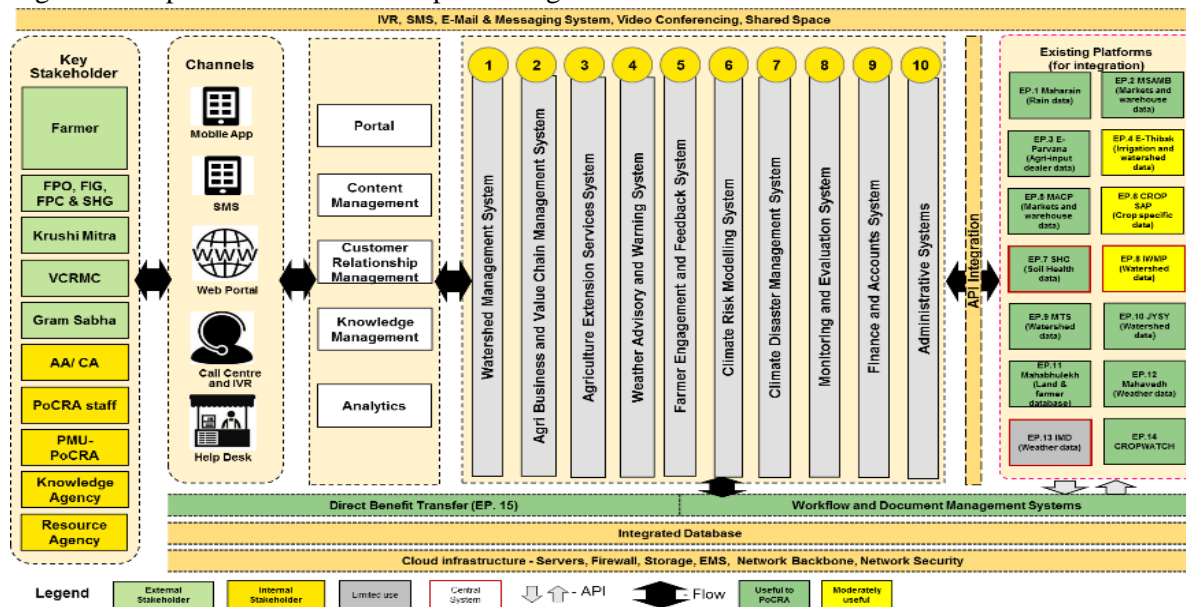
Over and above the above application level features, the PoCRA application is proposed to have common, basic and innovative features as below

Overarching features include	<ul style="list-style-type: none"> <li>▶ Multi-channel access including mobile and web application, kiosk/ touch-screen device and call centre</li> <li>▶ Stakeholder profile creation, management, maintenance and updation</li> <li>▶ Consolidated, easy to use and intuitive dashboards</li> <li>▶ Search, filter and compare capabilities</li> <li>▶ API gateway</li> <li>▶ Content Management</li> <li>▶ Bilingual application and SMS delivery (English and Marathi)</li> <li>▶ Audit trails, time stamps, geo-tag, GIS</li> <li>▶ MIS reports</li> <li>▶ FAQs</li> <li>▶ Master list</li> <li>▶ Exception handling</li> <li>▶ Moderated public forum</li> <li>▶ Notifications, alerts and warnings</li> <li>▶ Search and filter</li> <li>▶ Auto-generated map view</li> </ul>
Innovative features include	<ul style="list-style-type: none"> <li>▶ Machine learning</li> <li>▶ Image processing (Not OCR)</li> <li>▶ Video calling and streaming</li> </ul>

### 3.5. Proposed indicative conceptual design

The PoCRA digital platform is proposed to be deployed on the cloud. The figure below depicts an Proposed indicative conceptual design

Figure 4: Proposed indicative conceptual design



1. 32IVR, SMS, E-Mail & Messaging System, Video Conferencing, and Shared Space: This layer would comprise of functionalities that would enable seamless exchange of information. An integrated mail and messaging system including video conferencing facility will be integrated with the application. The system would consist of a messaging hub for data exchange and an integrated voice response wherein functionalities of capturing the queries and its resolution could be facilitated.
2. Key Stakeholders: The key stakeholders of this application include farmers, FPO members, FIG members, FPC members, SHG members, krushi mitras, VCRMC members, Gram Sabha members, AAs, CAs, PoCRA staff, PMU-PoCRA members, knowledge agency members and resource agency members. The user definitions have been provided in section 3.2 of this document.
3. Channels: The application will be integrated with multiple service delivery channels like mobile application, SMS, web portal, call centre & IVR and help desk. The listed channels are envisaged to be frequently used, however, more channels have been proposes under the project.
  - Mobile Application: Mobile application to allow easy access to Farmers, Krishi Mitra, AA/CA, PoCRA Staff, Appointed Agencies, PMU and other users of the PoCRA application.

- ▶ SMS: SMS would be used for the dissemination of information, acknowledgments, alerts, notifications, reminders, etc. SMS would also be used for authentication and third party nominations. Along with SMS, various other channels would be used according to the nature of information.
  - ▶ Web Portal: Web portal would be provided for all users.
  - ▶ Call Centre & IVR: This channel enables a two-way communication with the system via a Call Centre/IVR. It would benefit those farmers who do not have a smart phone or web access. They would be able to seek support from Krishi Mitras/AA/CA or call centre agents to seek information or submit applications. This facility would be available for PoCRA staff as well.
  - ▶ Helpdesk: A dedicated helpdesk facility would also be available to extend support for the users of the PoCRA digital platform.
4. Portal, Content Management, Customer Relationship Management, Knowledge Management, Analytics
- ▶ The dynamic and static contents of PoCRA schemes and advisory will be managed and maintained by integrated content management solution (CMS)
  - ▶ Client/ Customer Relationship Management (CRM) solution: This solution will help in maintaining and managing all stakeholders. The digital platform and methodologies would help the department to manage, measure, analyse, automate and offer facilities to its stakeholders
  - ▶ Knowledge Management: A knowledge management tool would enable analysis, categorisation and cleansing of knowledge and information
  - ▶ Analytics/ Big data – The application is proposed with an integrated analytics solution
5. Applications: The various applications and their functional requirements are detailed in section 1.3 of this document. A snap-shot of the features are listed in section 3.3 of this document. Some of the broad functionalities have been highlighted below.
- ▶ Watershed Management Application: This application provides watershed information, development status, PoCRA implementation, training and monitoring
  - ▶ Agri-Business and Value Chain Management Application: This application provides information, market linkages and transaction support for stakeholders in the value chain
  - ▶ Agriculture Extension Services Application: This application enables efficient way to disseminate agriculture knowledge and information via use of digital tools
  - ▶ Weather Advisory, Warning Application: This application renders agro-meteorology and automated data analysis tools to support accurate weather alerts, warnings, notification and forecasting
  - ▶ Farmer engagement and Feedback Application: This application extends services to PoCRA stakeholders to rate, ask, provide feedback and raise grievances in the application
  - ▶ Climate Risk Modelling: Develop automated crop advisory based on changing weather conditions
  - ▶ Climate Disaster Management: Tool to deal with climate emergencies and disasters - especially sudden onset disasters and extreme events

- 
- ▶ Monitoring and Evaluation application: Comprehensive monitoring and evaluation tool for PoCRA Project
  - ▶ Finance and Accounts Application: The application will be integrated with the DBT and BeAMS application
  - ▶ Administrative Applications: This application will support the overall control of the application including processes such as profile creation, roles management, desk management etc.
6. Platforms/ Existing applications for integration: The various applications and databases to be integrated with the application have been detailed out in section 2 of this document. These portals/databases have been referred to in the functional requirement specifications of this document.
7. Direct Benefit Transfer(DBT) and Document Management System(DMS):
- ▶ The application will be integrated with several applications which would be used by other departments and will be tightly integrated with Direct Benefit Transfer (DBT) portal of Government of Maharashtra as a single channel for all government schemes and services.
  - ▶ The DMS system would enable the storage of important documents such as MoMs, photographs etc.
  - ▶ Integrated Database- This database system would be one single integrated RDBMS platform which will store complete data such as master data, transaction data, images etc. The integrated framework would include standard and custom-built adapters for integration with external applications such as payment gateway, SMS gateway, social media and video conferencing systems
8. Cloud infrastructure: Servers, Firewall, Storage, Enterprise Management Systems, Network Backbone, Network Security
- The application will be hosted on cloud with API based integration with multiple databases and service delivery channels. Cloud infrastructure would include data centres (DC) and data recovery (DR) mechanisms.

## 4. Applications

### 1 Watershed Management Application

#### 1.1 Overview

Watershed is a geo-hydrological unit of an area draining to a common outlet point<sup>9</sup>. It is recognized as an ideal unit for planning & development of land water and vegetation resources. A watershed is an area that supplies water by surface or subsurface flow to a given drainage system or body of water, be it a stream, river, wetland, lake, or ocean. This project caters to the development of watersheds in identified districts of Maharashtra through various interventions indicated in annual action plan.

Watershed management is defined as any human action aimed at ensuring the sustainable use of natural resources in a watershed<sup>10</sup>. This project intends to introduce transformational changes in the agriculture sector by scaling-up climate-smart technologies and practices at farm and (micro) watershed level, that would contribute to drought-proofing and management of lands in states' most drought and salinity/sodicity-affected villages.

The Watershed Management application is proposed to support the implementation of PoCRA activities, host watershed information & development status, farm, entity or community level planning, training & monitoring and render user, a PoCRA activity dashboard. The project activities initiate at the planning phase followed by procurement of good and works and individual, community and organization level. Following are various activities that this application caters to.

#### **Mini/ Micro Level watershed<sup>11</sup> Plan (MLP)**

Participatory micro-planning process is a key feature of this project not only to understand the risk and vulnerability due to the climate change but also to plan adaptation strategy at the local level. All plans are proposed to have concurrence of locally agreed inclusive criteria. This activity has been envisioned to enhance community participation for building resilience to address climate vulnerability. Besides, the activity would create a strong ownership of the project in the long run.

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<sup>9</sup> The World Bank -

<http://documents.worldbank.org/curated/en/142971468779070723/pdf/442220NWP0dp111Box0327398B01PUBLIC1.pdf> (Accessed 15 March 2018)

<sup>10</sup> Food and Agriculture Organisation (FAO)

<sup>11</sup> Micro watershed – 0.05 to 0.5 km<sup>2</sup>

MLP is a Gram Panchayat-level project planning exercise which would be carried out with the involvement of the community and institutions. This is a seven-day participatory planning exercise which would help in mapping resources, identifying constraints, issues and possible activities for intervention. The key features of conducting MLP have been listed below.

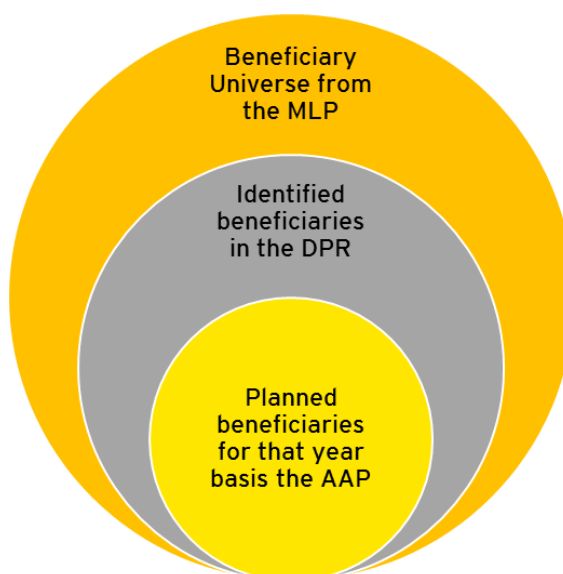
- ▶ Involvement of local government functionaries in planning
- ▶ Inclusion of people's representatives of local self-government (Gram Panchayat)
- ▶ Planning based on identification of local requirements and gaps
- ▶ A participatory-led approach that ensures inclusion of marginalized communities
- ▶ Provision of handy technical framework /tools for planning
- ▶ Leveraging constitutional platforms of Mahila Sabha & Gram Sabha
- ▶ Approach to identify inter-linkages and synergies amongst different components related to agriculture

The MLP would be carried out with the help of resource agencies as appointed by the PoCRA PMU.

### **Detailed Project Report (DPR) and Annual Action Plan (AAP)**

Based on the outcome of participatory micro-plan, a detailed project plan and an annual action plan will be developed. DPR and AAP would form the basic unit of planning for this project and it will give account of activities under Components A, B & C to be implemented in the cluster.

The DPR is a cluster level, physical and financial plan for 3-4 years and subsumes the gram panchayat level DPRs. It is created by AA or CA, referring the gram-panchayat level MLP and is reviewed and approved by the DSAO and District Co-ordination Committee (headed by the Collector). The DPRs can be reviewed and revised basis the changes requested by the CA/ AA or basis the changes in the AAP. Following is the depiction of how the beneficiary list gets prioritised within MLP, DPR and AAP



**Annual Action Plan:** The Annual Action Plan (AAP) is a cluster level annual plan prepared basis the DPR that defines the yearly physical and financial targets. The AAP includes a list of component level activities and beneficiary positions planned for the year. The AAP is reviewed and revised as frequently as six months and requires approvals from District-level PMU (DPMU), District Level Coordination Committee (DLCC), and PMU-PoCRA.

Besides the planning phase, this application would support procurement of goods and works at individual, community and producer organization level. These activities would in turn provide the following outcomes for end beneficiary especially the farmer:

- Transfer of climate resilient technology to farmers
- Demonstrate carbon sequestration through various carbon enhancement measures
- Conserve soil water
- Mitigate of problem of salinity
- Promote planned adoption of customized climate resilient agriculture practices that shall help farmers to reduce their yield variability and enhance farm production
- Manage surface and groundwater for improving water use efficiency
- Undertake crop-water budgeting and water security at the farm level
- Contribute to an increase in farmers' participation in selected value chains through the support to FPCs/FIGs
- Strengthen FPC/ FPO linkages with other actors in the value chains
- Promote practices and technologies in post-harvest management and value-addition that support climate adaptation and/or mitigation

### **Works procurement - Individual**

This category involves all good and works procurement activities that an individual can avail under PoCRA through the digital platform. The potential beneficiaries would be able to apply for the scheme, upload and input supporting documentation/requirements and receive timely notifications on the application status. The PoCRA (including the VCRMC), ATMA and Department of Agriculture officials, as per the hierarchy, would be able to assess the case, input and view its details (geo-tag, photographs etc.), approve online, receive notifications and review respective dashboards, on the digital platform. The approved beneficiaries would receive pre-sanction letters/ rejection letters and payments through the DBT system.

### **Goods procurement - Individual**

This category involves all goods procurement activities that an individual beneficiary can avail, to procure goods aiding the climate resilient farming systems under PoCRA, through the digital platform. The potential beneficiaries would be able to apply for procuring goods under the scheme, upload and input supporting documentation/requirements and receive timely notifications on the application status. The PoCRA (including the VCRMC), ATMA and Department of Agriculture officials as per the hierarchy, would be able to assess the case, input and view its details (geo-tag, photographs etc.), make approvals online, receive notifications and review respective dashboards, on the platform. The approved beneficiaries would be able to receive pre-sanction letters/ rejection letters and payments through the DBT system.

## Works and goods procurement - community

This category involves all goods and work procurement activities that a community would avail, to establish works/ structures to aid climate resilient farming, under PoCRA programme through the digital platform. AA/ CA/ VCRMC would be able to apply for the scheme, upload and input supporting documentation/requirements and receive timely notifications on the application status. The PoCRA (including the VCRMC), ATMA and Department of Agriculture officials as per the hierarchy, would be able to assess the case, input and view its details (geo-tag, photographs etc.), make approvals online, receive notifications and review respective dashboards, on the digital platform. The approved projects would be able to receive pre-sanction letters/ rejection letters and payments through the PoCRA digital platform.

**Strategic Research and Extension Plan (SREP)** is a comprehensive document prepared at the district level identifying research/ extension priorities for district, keeping in mind agro-ecological conditions and existing gaps in technology generation and dissemination in all agriculture and allied sector areas/ activities including in the area of seeds, mechanization, and plant protection. Existing SREPs would be updated to include the project approach and strategies in coordination with the line departments, Krushi Vigyan Kendras (KVKs), VCRMC, Private Sector, lead farmers and other stakeholders. The updated SREPs would be aligned with the mini watershed plans/ Micro level plans (MLPs) developed under Component A. - Promoting Climate-Resilient Agricultural Systems (Refer to the Project implementation Plan (PIP) under the Components and Sub-components section).

### 1.2 Indicators

The following table depicts indicators used to measure the performance and efficacy of the activity, information and services provide by this application. A detailed understanding and narration of indicators alongwith component and sub-component wise indicator mapping can be found in annexure 11.1 and 11.2

Indicator type	Name of Indicator	Unit of measure	Frequency	Source
Project Development Objectives (PDO) indicators	Climate resilient agriculture: Increase in water productivity at farm level	Percentage	Annual (After 3 year)	PoCRA MIS
	Climate resilient agriculture: Improved yield uniformity and stability	Percentage	Spatial variability is measured at mid-term and at the end of the project implementation	PoCRA MIS
	Net greenhouse gas emissions	Tonnes/year	End of the project	EX ACT model
	Farm income (ratio of farm income for women-headed HH with/without PoCRA)	Number	At mid-term and end-of-project implementation.	PoCRA MIS
	Farmers reached with agricultural assets or services	Number	Semi-annual	PoCRA MIS



Intermediate indicators	Farmers adopting improved agricultural technology	Number	Annual	PoCRA MIS
	Area provided with new/improved irrigation or drainage services	Hectare (Ha)	Annual	PoCRA MIS
	Climate resilient agriculture: Improved availability of surface water for agriculture (from new farm ponds)	Cubic Meter(m3)	Semi-annual	PoCRA MIS
	Climate resilient agriculture: Area with GAPs for improved management of saline and sodic soils (enhanced soil health)	Hectare (ha)	Semi-annual	PoCRA MIS
	Share of crop production area (pulses and oilseeds) under cultivation with climate-resilient varieties	Percentage	Annual	PoCRA MIS
	Project-supported Farmer Producer Companies with growth in annual profits	Number	Annual	PoCRA MIS
	Strategic Research and Extension Programs (SREP) with internalized climate resilience agenda			
	Beneficiary participation and civic engagement: approved participatory mini watershed plans implemented or under implementation	Number	Annual (After second year)	PoCRA MIS

### 1.3 Features

The defining features of this application have been listed below:

- ▶ A digital access (on the PoCRA platform) would be provided to relevant stakeholders where they would be able to view secondary data collected from the village and village-wise MLP meta-data
- ▶ This application would be able to interplay with the DBT system
- ▶ This application would enable PoCRA digital application to provide stakeholder with rights to view and input data and provide automatic/ manual outputs
- ▶ This application would be able to calculate and provide cost estimates based on the inputs provided by the AA/ CA and logic provided and pre-decided by the PoCRA-PMU
- ▶ This application would allow the relevant stakeholders to access information regarding market intelligence, knowledge dissemination and advisory application to provide relevant advisory while MLP preparation

- ▶ This application would be able to facilitate digital approvals, provide comments, recommendations and revisions to support quick DPR and AAP formation
- ▶ This application would be able to capture key performance indicators and display appropriate MIS reports
- ▶ This application would be able to provide multi-channel notification mechanism to relevant stakeholders
- ▶ The PoCRA digital platform should be able to populate beneficiary details basis the DPR and AAP, as required in the aligned processes
- ▶ This application provides multi-channel feedback and mechanism for grievance redressal as a part of the PoCRA application

#### 1.4 Functional Requirement Specifications (FRS)

Sr. No	User	Action	Object	Functional Description
Preparation of Mini/ Micro-level Watershed (MLP)				
1.1.	PoCRA PMU	Update	Resource Agency	PoCRA PMU should be able to update the digital platform with appointed resource agency/ agencies to conduct MLP exercise
1.2.	PoCRA PMU	Access	Resource Agency	PoCRA PMU should be able to render access to resource agency/ agencies, as per the geography, for preparation of MLP
1.3.	Resource Agency (RA)	Create/ Update	Profile	Resource Agency should be able to create profile on the PoCRA digital platform
1.4.	PoCRA PMU	Create/ Update	MLP schedule	PoCRA PMU should be able to input and update gram panchayat-wise MLP preparation schedule
1.5.	Relevant Stakeholder	View	MLP schedule	Relevant stakeholders should be able to view the MLP schedule
1.6.	AA/CA	Create/ Update	Volunteer list	AA/ CA should be able to input list of volunteers, as decided by Gram Panchayat, who would be assisting the preparation of MLP
1.7.	AA/CA	Create/ Update	Training list	AA/CA should be able to input and propose schedule and participants of training regarding MLP
1.8.	DSAO/SDAO	Approve	Training list	DSAO/SDAO should be able to approve the training schedule and participant lists
1.9.	AA/CA	Create/ Update	Attendance list	AA/ CA should be able to input participant's attendance list of the training regarding MLP
1.10.	DSAO/SDAO	Create/ Update	MLP week schedule	DSAO/ SDAO should be able to input day-wise schedule of MLP preparation week
1.11.	DSAO/SDAO	Access	Advisory	DSAO/ SDAO should be able to view and choose relevant data/ information and pertinent advisory so that it can be provided to the farmers during MLP preparation

Sr. No	User	Action	Object	Functional Description
1.12.	DSAO/SDAO	Access	Advisory	DSAO/SDAO should be able to forward the chosen information and advisory to selected field staff that would be engaged in MLP preparation
1.13.	AA/CA/DSAO/SDAO	View	SREP information and data	AA/CA/DSAO/SDAO should be able to view and choose relevant data/ information in the SREP and pertinent advisory so that it can be provided to the farmers during MLP preparation.
1.14.	Gram Sabha	Create/Update	Orientation meeting list	Gram Sabha should be able to input schedule and participants of orientation meeting regarding MLP
1.15.	Gram Sabha	Create/Update	VCRMC	Gram Sabha should be able to input proposed names of VCRMC candidates
1.16.	AA/CA/RA	Upload	Secondary information	RA, CA and AA should be able to upload relevant secondary information of target villages on the digital platform including geo-tagging and geofencing of relevant objects (watershed structures, rivers, houses etc.)
1.17.	AA/CA/RA/volunteers	Input	Data/information	RA, CA, AA and chosen volunteers should be able to input data/ information as required in the MLP forms[1] simultaneously
1.18.	AA/CA/RA/volunteers	Upload	Data/information	RA, CA, AA and chosen volunteers should be able to upload data/ information as required in the MLP forms simultaneously
1.19.	AA/CA/RA/volunteers	Upload	Data/information	RA, CA, AA and chosen volunteers should be able to geo-tag and geo-fence objects including existing watersheds along with photographs simultaneously
1.20.	AA/CA	Create/Update	MLP	AA/CA should be able to view data/ information and geo-tagging from various stakeholders, consolidate the data, edit and confirm information and prepare a comprehensive MLP
1.21.	AA/CA/Gram Sabha	Approve/Reject	MLP	Gram Sabha should be able to upload the minutes of meeting approving MLP and resolution that states approved VCRMC members
1.22.	DSAO/SDAO	Approve/Reject	MLP	DSAO/ SDAO should be able to view, edit, request revision, input comments, assign an inspector and approve the MLP document and all the uploaded documents
1.23.	District Level Co-ordination Committee	Approve/Reject	MLP	District Level Co-ordination Committee should be able to view, edit, request revision, input comments and approve the MLP document and all the uploaded documents
1.24.	PoCRA PMU	Approve/Reject	MLP	District Level Co-ordination Committee should be able to view, edit, request revision, input comments and approve the MLP document and all the uploaded documents

Sr. No	User	Action	Object	Functional Description
1.25.	PoCRA digital platform	Inform	Relevant stakeholder	PoCRA digital platform should be able to inform and notify relevant stakeholders about the revisions requested in MLP and approvals sought
1.26.	PoCRA digital platform	Display	Relevant section of MLP	PoCRA digital platform should be able to display relevant sections of update MLP to relevant stakeholders for reference
1.27.	DSAO/SDAO/VCRM	Update	MLP	VCRM, DSAO and SDAO should be able to propose revision in MLP
1.28.	DSAO/SDAO/VCRM	Recommend	Items/ activities	VCRM, DSAO and SDAO should be able propose items/ activities that are not currently a part of PIP
1.29.	PoCRA PMU	View	Items/ activities	VCRM, DSAO and SDAO should be able view items/ activities that are not currently a part of PIP
1.30.	AA/CA/PoCRA appointed personnel	Update	MLP	AA/ CA/ PoCRA appointed personnel should be able to have access to the GIS application where he/she should be able to geo-tag and geo-fence the existing watershed location
1.31.	AA/CA/PoCRA appointed personnel	Update	MLP	AA/ CA/ PoCRA appointed personnel should be able to update the measurements of existing watersheds including land owner, depth, water level, water capacity other measurements and specifications on the MLP along with any other information prescribed by PoCRA
1.32.	AA/CA/PoCRA appointed personnel	Update	MLP	AA/ CA/ PoCRA appointed personnel should be able to extract information of existing watershed from PoCRA which will be update from different systems as prescribed by PoCRA
1.33.	Relevant Stakeholder	Access	MLP	Relevant stakeholders should be able to access to the MLP
1.34.	AA/CA	Inform	DPR and AAP preparation	PoCRA digital platform should be able to inform and remind CA and AA about preparation of DPR and AAP
1.35.	PoCRA digital platform	Display	Dashboard	PoCRA digital platform should be able to display stakeholder wise dashboard which would provide a graphical presentation of data regarding all activities undertaken, falling under PoCRA (such as application by beneficiaries, issuance of pre-sanction letter, approval by PoCRA functionary etc.)
<b>Preparation of DPR and AAP</b>				
1.36.	AA/CA/RA	Calculate	Estimated costs	CA/AA should be able to calculate the cost estimates of the proposed watershed works and goods procurement at beneficiary's (farmer/ entity) field, based on the inputs of AA/CA and logic prescribed by PoCRA
1.37.	AA/CA/RA	View	Planning reports	CA/AA should be able to view planning reports including MLP and relevant PIP meta-data during preparation of DPR

Sr. No	User	Action	Object	Functional Description
1.38.	AA/CA/RA	Create/ Update	DPR	CA/ AA should be able view data, confirm and edit data fed by him at beneficiary's field for preparation of DPR in the PoCRA digital platform
1.39.	AA/CA/RA	Create/ Update	DPR	CA/ AA should be able to fill and submit the DPR template as provided on the PoCRA digital platform for VCRMC to review. Once the DPR template is submitted, CA/AA should not be able to make further edits
1.40.	AA/CA/VC RMC member	View	DPR data	VCRMC should be able to view the DPR data and planning documents including the MLP and PIP information
1.41.	AA/CA/VC RMC member	Approve/ Reject	DPR	VCRMC should be able to approve or reject the DPR
1.42.	AA/CA/VC RMC member	Input	Comments on DPR	In case of approval or rejection, the VCRMC should be able to provide qualitative comments and upload scan/ original Minutes of Meeting (MoM)
1.43.	AA/CA/VC RMC member	Input	Comments on DPR	In case of rejection, the VCRMC should be able to assign the case to AA/CA and release DPR for further edits
1.44.	AA/CA	Create/ Update	DPR	CA/ AA should be able to edit the DPR basis the recommendations as provided on the PoCRA digital platform for VCRMC to review. Once the DPR template is submitted, CA/AA should not be able to make further edits
1.45.	AA/CA	View	Planning reports	CA/AA should be able to view planning reports including MLP, relevant PIP meta-data and DPR during preparation of AAP
1.46.	AA/CA	Create/ Update	AAP	CA/ AA should be able view, confirm and edit data auto-populated by the system in the AAP template, basis the DPR
1.47.	AA/CA	Create/ Update	AAP	CA/ AA should be able to fill and submit the AAP template as provided on the PoCRA digital platform for VCRMC to review. Once the AAP template is submitted, CA/AA should not be able to make further edits
1.48.	AA/CA/VC RMC member	View	MLP, DPR and PIP data	VCRMC should be able to view the AAP and planning documents including the MLP, DPR and PIP information
1.49.	AA/CA/VC RMC member	Approve/ Reject	AAP	VCRMC should be able to approve or reject the AAP
1.50.	AA/CA/VC RMC member	Approve/ Reject	AAP	In case of approval or rejection, the VCRMC should be able to provide qualitative comments and upload scan/ original Minutes of Meeting (MoM)

Sr. No	User	Action	Object	Functional Description
1.51.	AA/CA/VC RMC member	Approve/Reject	AAP	In case of rejection of AAP, the VCRM should be able to assign the case to AA/CA and release DPR for further edits
1.52.	AA/CA	Create/Update	AAP	CA/ AA should be able to edit the AAP basis the recommendations as provided on the PoCRA digital platform for VCRM to review. Once the AAP is submitted, CA/AA should not be able to make further edits
1.53.	AA/CA	Update	MLP, DPR and AAP	CA or AA should be able to submit individual/community watershed requests on the MLP, DPR and AAP application and upload photographs too
1.54.	AA/CA	Update	MLP, DPR and AAP	CA/ AA should be able to have access to the GIS application where he/she should be able to geo-tag and geo-fence the planned watershed location
1.55.	PoCRA digital platform	Display	Dashboard	PoCRA digital platform should be able to display stakeholder wise dashboard which would provide a graphical presentation of data regarding all activities undertaken, falling under PoCRA (such as application by beneficiaries, issuance of pre-sanction letter, approval by PoCRA functionary etc.)
<b>Watershed Individual – Works Procurement Individual</b>				
1.56.	Farmer/Beneficiary	Submit	Application	Beneficiary should be able to submit an application for watershed construction on the DBT Portal which is forwarded to the PoCRA digital platform
1.57.	PoCRA digital platform	Pull	Watershed Process Monitoring application / Algorithms	PoCRA should be able to extract on-field data entered by functionaries through Watershed Process Monitoring application/Algorithms through proper channels
1.58.	AA/CA/VC RMC member	Receive	Alert	PoCRA digital platform should be able to notify AA/CA/VCRM/Other Stakeholders through App/SMS/Other channels about received applications, forms, payment requests, etc.
1.59.	Relevant Stakeholder	View	Dashboard	Relevant stakeholder should be able to view dashboard on PoCRA digital platform consisting of pending assessment, checklists, approvals, applications, etc. along with the recommended steps
1.60.	AA/CA	Access	Databases	AA/CA should be able to access MLP, DPR, AAP, SREP, Financial Envelope and other databases/libraries/ systems/ applications as prescribed by PoCRA
1.61.	AA/CA	Update	Watershed Information	AA/CA should be able to update farm information on the PoCRA digital platform along with uploading

Sr. No	User	Action	Object	Functional Description
				photographs of the farm and geo-tagging the farm land to the map
1.62.	AA/CA	Create/ Update	Feasibility Report	AA/CA should be able to conduct technical and financial feasibility, study of the requested watershed and update information on the PoCRA digital platform like land availability, measurement of the proposed watershed, water storage capacity of the proposed watershed, ground water recharge availability and other parameters/specifications as prescribed by PoCRA
1.63.	AA/CA	View	Farmer profile	AA/CA should be able to view relevant farmer's profile and data while preparing the feasibility report
1.64.	AA/CA	View	Farmer profile	AA/ CA should be able to view auto-populated data from the farmer's profile, in the feasibility report template while filling the feasibility report
1.65.	AA/CA	Update	Measurement Book	PoCRA digital platform should have a digital measurement book where AA/CA should be able to enter the measurement specifications like depth, water capacity, material needed, etc. of the proposed watershed works to the measurement book. The template of the measurement book would be as prescribed by PoCRA PMU and editable by authorised personnel of PoCRA PMU
1.66.	PoCRA digital platform	Calculate	Cost Estimates	PoCRA digital platform should be able to calculate the cost estimates of the proposed watershed works based on the inputs of AA/CA and logic prescribed by PoCRA
1.67.	AA/CA	Create/ Update	Feasibility Report	AA/CA should be able to create/upload a feasibility report on the PoCRA digital platform. The template of the feasibility report would be as prescribed by PoCRA PMU and editable by authorised personnel of PoCRA PMU
1.68.	AA/CA	Recommend	Training to Farmers	AA/CA should be able to recommend relevant trainings to farmer for conducting construction of watershed on the PoCRA digital platform which would be updated to the training systems
1.69.	VCRMC member	Receive	Notification/ Alerts	PoCRA digital platform should be able to notify VCRMC/Chairman to screen applications basis the feasibility report prepared by AA/CA
1.70.	VCRMC member	Create/ Update	Beneficiary List	VCRMC should be able to screen the beneficiary requests and submit a list of approved/rejected cases on the PoCRA digital platform
1.71.	VCRMC member	Upload	MoM	VCRMC should be able to upload a signed and stamped MoM of the screening conducted, on the PoCRA digital platform

Sr. No	User	Action	Object	Functional Description
1.72.	PoCRA digital platform	Forward	Beneficiary List to DBT System	PoCRA digital platform should be able to update the beneficiary list on the DBT system and trigger the issuance of letters
1.73.	DBT System	Issue	Pre Sanction/ Rejection Letters	DBT system should be able to issue pre sanction letters to approved beneficiaries and rejection letters to rejected beneficiaries
1.74.	Farmer/Beneficiary	Submit	Grievance	Rejected beneficiary should be able to submit grievance in the grievance redressal system
1.75.	Farmer/Beneficiary	Receive	Advisory	PoCRA should be able to provide advisory to build Water Shed by extracting various databases as prescribed by PoCRA
1.76.	Relevant Stakeholder	View	Dashboard	PoCRA should be able to provide a dashboard view to all stakeholders (PMU, AA, CA and VCRMC) with a full project lifecycle view divided into task and sub tasks along with timelines
1.77.	Farmer/Beneficiary	View	Dashboard	System should be able to provide a dashboard to beneficiary to view work done, pending work, next activities, timelines and other information prescribed by PoCRA
1.78.	Farmer/Beneficiary	Receive	Alerts	PoCRA should be able to provide alerts to beneficiary on upcoming activities
1.79.	Farmer/Beneficiary	Receive	Alerts	PoCRA should be able to provide alerts about delayed activities to beneficiary
1.80.	VCRMC member	Update	Work Progress	VCRMC should be able to supervise phase wise construction of watershed and intimate the completion on the PoCRA digital platform
1.81.	AA/CA	Update	Work Progress	AA/CA should be able to indicate supervision on the watershed construction and record technical specifications on the PoCRA digital platform
1.82.	AA/CA	Update	Measurement Book	AA/CA should be able to update information to the measurement book basis the actual construction work conducted
1.83.	AA/CA	Update	Work Progress	AA/CA should be able to report anomalies in construction based on the measurement book, sanction letter and other reports
1.84.	AA/CA	Update	Measurement Book	PoCRA should be able to update the measurement book after the construction of watershed based on the inputs of AA/CA on the actual construction work conducted and should be able to send to beneficiary for approval
1.85.	Farmer/Beneficiary	Update	Approval	Beneficiary should be able to approve/reject the measurements as calculated by the AA/CA using OTP/Fingerprint or other medium



Sr. No	User	Action	Object	Functional Description
1.86.	DSAO/SDAO	View	Action pending	Post verification by beneficiary, PoCRA digital platform should notify DSAO/ SDAO through App/SMS/other channels about action pending at his end
1.87.	DSAO/SDAO	Update	Inspector Information	DSAO /DAO should be able to appoint an inspector (if needed) and update on the PoCRA digital platform and facilitate an assessment of the construction
1.88.	DSAO/ SDAO/ Inspector	Upload	Assessment Report	DSAO /Inspector/DAO should be able to upload/update a report of the assessment conducted on the PoCRA digital platform
1.89.	DSAO/ SDAO/ Inspector	Update	Beneficiary Information	DSAO /Inspector/ DAO should be able to approve/ reject the case on the PoCRA digital platform and render comments
1.90.	DSAO/ SDAO/ Inspector	Update	Recommendations	In case of rejections, DSAO/Inspector should be able to record recommendations that are sent to the beneficiary to make changes and reapply for approval
1.91.	Farmer/Beneficiary	Update	Completion of work	Beneficiary should be able to update completion of work and apply for payment on the DBT Portal
1.92.	DBT System	Verify	Approval	DBT System should be able to trigger PoCRA digital platform to check for all approvals
1.93.	PoCRA digital platform	Verify	Approval	PoCRA digital platform should be able to confirm the approvals of the beneficiary who applied for payment to the DBT System to disburse payment
1.94.	Relevant Stakeholder	Receive	Notifications/Alerts	In case of pending approvals, PoCRA digital platform should notify the stakeholders for pending approvals along with escalations
1.95.	PoCRA	Access	PFM Process	After getting all approvals, PoCRA digital platform should be able to trigger the PFM process in DBT System
1.96.	Farmer/Beneficiary	Receive	Payment	DBT System should be able to disburse payment through PFM process and update the CIN Number to PoCRA digital platform
1.97.	DBT System	Update	Payment	DBT System should be able to forward the payment information to PoCRA digital platform
1.98.	Farmer/Beneficiary	Update	Feedback	Beneficiary should be able to record a mandatory feedback and rating on the PoCRA digital platform of the scheme availed and various stakeholders
1.99.	AA/CA/RA/M&E Agency	Update	Impact/ Outcome	AA/CA should be able to record impact/outcome on the PoCRA digital platform as per the monitoring and evaluation indicators as provided by the PoCRA PMU

Sr. No	User	Action	Object	Functional Description
1.100.	PoCRA digital platform	Display	Dashboard	PoCRA digital platform should be able to display stakeholder wise dashboard which would provide a graphical presentation of data regarding all activities undertaken, falling under PoCRA (such as application by beneficiaries, issuance of pre-sanction letter, approval by PoCRA functionary etc.)
<b>Watershed Goods Procurement – Goods Procurement Individual</b>				
1.101.	Farmer/Beneficiary	Submit	Application	Beneficiary should be able to submit a request to procure goods related to watershed development on the DBT portal and this request should be forwarded to the PoCRA digital platform
1.102.	AA/CA	Receive	Notifications/ Alerts	PoCRA digital platform should be able to notify AA/CA through App/SMS/Other channels about the received application
1.103.	Relevant Stakeholder	View	Dashboard	Relevant stakeholder should be able to view dashboard on PoCRA digital platform consisting of pending assessment, checklists, approvals, applications, etc. along with the recommended steps
1.104.	AA/CA	Access	Databases	AA/CA should be able to access MLP, DPR, AAP, SREP, Financial Envelope and other databases/libraries/ systems/ applications as prescribed by PoCRA
1.105.	AA/CA	Update	Beneficiary Information	AA/CA should be able to update farm information on the PoCRA digital platform along with uploading photographs of the farm and geo-tagging of the farmland to the map
1.106.	AA/CA	Update	Feasibility Report	AA/CA should be able to conduct technical and financial feasibility study on the requested goods and update the information on the PoCRA digital platform
1.107.	AA/CA	View	Farmer profile	AA/CA should be able to view relevant farmer's profile and data while preparing the feasibility report
1.108.	AA/CA	View	Farmer Profile	AA/CA should be able to view auto-populated data from the farmer's profile, in the feasibility report template while filling the feasibility report
1.109.	AA/CA	Update	Verification Report	PoCRA digital platform should have a digital verification report where AA/CA should be able to enter the goods specifications like product make, capacity, material etc. of the proposed watershed works to the measurement book. The template of the verification report would be as prescribed by PoCRA PMU and editable by authorised personnel of PoCRA PMU
1.110.	PoCRA	Calculate	Cost Estimates	PoCRA digital platform should be able to calculate the cost estimates of the goods based on the inputs of AA/CA and logic prescribed by PoCRA

Sr. No	User	Action	Object	Functional Description
1.111.	AA/CA	Upload	Feasibility Report	AA/CA should be able to create/upload a feasibility report on the PoCRA digital platform. The template of the feasibility report would be as prescribed by PoCRA PMU and editable by authorised personnel of PoCRA PMU
1.112.	AA/CA	Recommend	Trainings	AA/CA should be able to recommend relevant trainings to farmer for the proposed goods which should also be updated in the training systems
1.113.	AA/CA	Update	Advisory	AA/CA should be able to provide advisory to beneficiary on the vendors for procuring the goods along with market rates and other specifications
1.114.	VCRMC member	Receive	Notifications/ Alerts	PoCRA digital platform should be able to notify VCRMC/Chairman to screen applications basis the feasibility report prepared by AA/CA
1.115.	VCRMC member	Create/Update	Beneficiary List	VCRMC should be able to screen the beneficiary requests and submits a list of approved/rejected cases on the PoCRA digital platform
1.116.	VCRMC member	Upload	MoM	VCRMC should be able to upload a signed and stamped MoM of the screening conducted
1.117.	PoCRA digital platform	Update	Beneficiary List	PoCRA digital platform should be able to update the beneficiary list on the DBT system and trigger the issuance of pre-sanction letters
1.118.	DBT System	Issue	Pre Sanction/ rejection Letters	DBT system should be able to issue pre sanction letters to approved beneficiaries and rejection letters to rejected beneficiaries
1.119.	Farmer/Beneficiary	Submit	Grievance	Rejected beneficiary should be able to submit grievance in the grievance redressal system of PoCRA digital platform
1.120.	Farmer/Beneficiary	Update	Procurement Information	Beneficiary should be able to conduct an open market procurement as per the specifications mentioned in the pre sanction letter and record the details of procurement (format as provided by PoCRA PMU) same on the PoCRA digital platform
1.121.	Farmer/Beneficiary	Upload	Procurement Receipts	Beneficiary should be able to upload receipts of procurement on the PoCRA digital platform
1.122.	AA/CA	Upload	Procurement Documents	AA/CA should be able to supervise the good installation and uploads verification documents on the PoCRA digital platform
1.123.	AA/CA	Upload	Procurement Report	AA/CA should be able to upload a verification report including vendor receipts, photographs of installed goods and geo-tagging of farm. AA/ CA should especially input costs of the goods
1.124.	Farmer/Beneficiary	Approve/Reject	Cost Estimates	Beneficiary should be able to approve/reject the goods cost entered by through SMS/OTP/Biometric

Sr. No	User	Action	Object	Functional Description
1.125.	DSAO/ SDAO/ Inspector	Receive	Notificatio ns/ Alerts	Post verification by beneficiary, PoCRA digital platform should be able to notify DSAO/ SDAO through App/SMS/other channels
1.126.	DSAO/SDA O	Update	Inspector Informatio n	DSAO should be able to appoint an inspector (if needed) and update on the PoCRA digital platform and conduct an assessment of the construction
1.127.	DSAO/Inspe ctor	Update	Assessmen t Report	DSAO/Inspector should be able to upload/update a report of the assessment conducted on the PoCRA digital platform
1.128.	DSAO/Inspe ctor	Update	Approval	DSAO/Inspector should be able to record approval/rejection on the PoCRA digital platform
1.129.	DSAO/Inspe ctor	Update	Assessmen t Report	In case of rejections, DSAO/Inspector should be able to record recommendations that are sent to the beneficiary to make changes and reapply for approval
1.130.	Farmer/Bene ficiary	Apply	Payment	Beneficiary should be able to apply for payment on the DBT Portal
1.131.	DBT System	Trigger	PoCRA digital platform	DBT System should be able to trigger PoCRA digital platform to check for all approvals for payment disbursement
1.132.	PoCRA digital platform	Verify	Approval	PoCRA digital platform should be able to confirm the approvals of the beneficiary who applied for payment to the DBT System to disburse payment
1.133.	Relevant Stakeholder	Receive	Notificatio ns/ Alerts	In case of pending approvals, PoCRA digital platform should be able to notify the stakeholders for pending approvals along with escalations
1.134.	PoCRA digital platform	Access	PFM Process	After getting all approvals, PoCRA digital platform should be able to trigger the PFM process in DBT System
1.135.	Farmer/Bene ficiary	Receive	Payment	DBT System should be able to disburse payment through PFM process and update the CIN Number to PoCRA digital platform
1.136.	DBT System	Update	Payment	DBT System should be able to forward the payment information to PoCRA digital platform and other databases/systems
1.137.	Farmer/Bene ficiary	Update	Feedback	Beneficiary should be able to record a feedback and rating on the PoCRA digital platform
1.138.	AA/CA/M& E Agency	Update	Impact/Out come	AA/CA should be able to record impact/outcome on the PoCRA digital platform as per the monitoring and evaluation indicators as provided by the PoCRA PMU
1.139.	PoCRA digital platform	Display	Dashboard	PoCRA digital platform should be able to display stakeholder wise dashboard which would provide a graphical presentation of data regarding all activities undertaken, falling under PoCRA (such as

Sr. No	User	Action	Object	Functional Description
				application by beneficiaries, issuance of pre-sanction letter, approval by PoCRA functionary etc.)
<b>Watershed Community – Goods and Works Procurement Community</b>				
1.140.	AA/CA/VC RMC member	Create/ Update	Procurement Plan	AA/CA/ VCRMC should be able to create and upload a community procurement plan for building community watersheds based on the MLP
1.141.	AA/CA/VC RMC member	View	MLP for community level works plan preparation	AA/CA/ VCRMC should be able to view MLP data and information related to the geography for community level works plan preparation
1.142.	AA/CA	Update	Site details	AA/CA identifies site for community level watershed development work and should be able to update information on the PoCRA digital platform including geo-tagging and geo-fencing of identified site along with photographs of site
1.143.	AA/CA	Update	Community Works Information	AA/CA should be able to enter details and specifications of community works on the PoCRA digital platform
1.144.	AA/CA/DS AO/SDAO	Approve/ Reject	Procurement Plan	AA/CA/DSAO/SDAO should be able to approve the plan created by the AA/CA and updates the PoCRA digital platform
1.145.	DBT/ PoCRA digital platform	Issue	Pre Sanction/ Rejection Letter	DSAO/ SDAO should be able to issue pre sanction letter to the approved beneficiaries and rejection letters to the rejected beneficiaries through the DBT portal and same should be updated on the PoCRA digital platform
1.146.	VCRMC member	View	Pre Sanction/ Rejection Letter	VCRMC should be able to conduct a tendering process for watershed as per the guidelines mentioned in the sanction letter
1.147.	VCRMC member	Upload	MoM	VCRMC should be able to conduct a screening exercise to shortlist vendors and upload a signed and stamped MoM identifying the vendor
1.148.	VCRMC member	Upload	Procurement Report	VCRMC should be able to upload a report on the tendering process conducted as per format prescribed by the PoCRA PMU
1.149.	VCRMC member	Issue	LOI/Work order	VCRMC should be able to issue a Letter of Intent (LoI) to the vendor and upload the same to PoCRA digital platform
1.150.	AA/CA	Update	Work Progress	AA/CA should be able to update the status and confirmation of construction of watershed on the PoCRA digital platform
1.151.	AA/CA	Update	Measurement Book	AA/CA should be able to update details on the measurement book as per the actual construction

Sr. No	User	Action	Object	Functional Description
1.152.	AA/CA	Update	Work Progress	AA/CA should be able to upload photographs of the community works on the PoCRA digital platform along with confirming the Geo-tag on the GIS application
1.153.	VCRMC member	Receive	Notifications/ Alerts	VCRMC chairman should be notified of phase wise completion of work and should verify the same and the committee verifies the watershed post completion of work
1.154.	DSAO/SDAO	Update	Inspector Information	DSAO/ SDAO should be able to appoint an inspector (if needed) and update on the PoCRA digital platform and conduct an assessment of the construction
1.155.	DSAO/ SDAO/ Inspector	Update	Procurement Report	Inspector should be able to upload a report of the assessment and update approval on the PoCRA digital platform
1.156.	DSAO/SDAO	Update	Payment	DSAO/ SDAO should be able to upload a scanned copy of NEFT/DD/Cheque on the PoCRA digital platform along with the payment reference number
1.157.	VCRMC member	Verify	Payment	VCRMC should be able to confirm the receipt of payment on the PoCRA digital platform
1.158.	AA/CA/M&E Agency	Update	Impact/ Outcome	AA/CA should be able to record outcome/feedback on the PoCRA digital platform
1.159.	PoCRA digital platform	Display	Dashboard	PoCRA digital platform should be able to display stakeholder wise dashboard which would provide a graphical presentation of data regarding all activities undertaken, falling under PoCRA (such as application by beneficiaries, issuance of pre-sanction letter, approval by PoCRA functionary etc.)
<b>Procurement by FFFS for PoCRA activities</b>				
1.160.	FIG/FPO/FPC/SHG	Submit	Application request	FIG/FPO/FPC/SHG should be able to submit procurement and other application requests via the DBT portal
1.161.	AA/CA	Recommend	FIG/FPO/FPC/SHG for trainings	AA/CA should be able to nominate FIG/FPO/FPC/SHG for relevant trainings
1.162.	FIG/FPO/FPC/SHG	Authenticate	Training nominations	FIG/FPO/FPC/SHG should be able to authenticate the training nomination via OTP or any other channel
1.163.	PD ATMA	Pull	Application request	PD - ATMA should be able to access all application requests from FIG/FPO/FPC/SHG to accept/reject applications
1.164.	PD ATMA	Pull	Data from relevant government websites	PD - ATMA should be able to extract information on FIG/FPO/FPC/SHG and schemes from relevant government websites to conduct project feasibility and financial capability

Sr. No	User	Action	Object	Functional Description
			and database	
1.165.	PD ATMA	Submit	Feasibility report	PD - ATMA should be able to generate/upload a feasibility report on the portal
1.166.	PD ATMA	Submit	Approval/ Rejection on Application request	PD - ATMA should be able to approve/ reject application requests
1.167.	FIG/FPO/FPC/SHG	Receive	Acceptance/ Rejection letter	PoCRA digital platform should facilitate issuance of acceptance/rejection letter to FIG/FPO/FPC/SHG through DBT
1.168.	FIG/FPO/FPC/SHG	Receive	Grievance form/link	PoCRA digital platform should be able to send form/link for raising grievances post rejection
1.169.	FIG/FPO/FPC/SHG	Receive	Alerts & Notifications	PoCRA digital platform should alerts and notifications to FPO/FIG/FPC/SHG of approval/ rejection and other progress through SMS/E-mail/App/Other channels
1.170.	FIG/FPO/FPC/SHG	Upload	Bank Documents	FIG/FPO/FPC/SHG should be able to upload bank approval and other necessary documents on the PoCRA digital platform
1.171.	PD ATMA	View	Bank Documents	PD-ATMA should be able to access the documents submitted by FIG/FPO/FPC/SHG and other documents/databases
1.172.	PD ATMA	Submit	Approval/ Rejection	PD-ATMA should be able to approve/ reject application requests on the PoCRA digital platform
1.173.	PD ATMA	Upload	Assessment report	PD-ATMA should be able to upload a signed and stamped report of the assessment conducted
1.174.	PD ATMA	Upload	Approved list	PD-ATMA should be able to generate/ upload an approved list of FIG/FPO/FPC/SHG
1.175.	FIG/FPO/FPC/SHG	Receive	Alerts & Notifications	FIG/FPO/FPC/SHG should receive timely alerts and notifications on progress on application
1.176.	FIG/FPO/FPC/SHG	View	Payment Schedule	FIG/FPO/FPC/SHG should get a dashboard view of payment schedule along with the pre sanction letter
1.177.	FIG/FPO/FPC/SHG	Upload	Photographs/ Documents / Information of phase completion	FIG/FPO/FPC/SHG should be able to upload photographs, documents, information and geo-tags after completion of each phase
1.178.	PD ATMA	View	Photographs/ Documents	PD - ATMA should be able to view the photographs, documents and geo-tagged information updated by

Sr. No	User	Action	Object	Functional Description
			/ Information of phase completion	beneficiary/entity to provide approval of phase completion
1.179.	FIG/FPO/FP C/SHG	Upload	Bank verification	FIG/FPO/FPC/SHG should be able to upload bank verification documents on the PoCRA digital platform
1.180.	PMU	View	Dashboards & Reports	PoCRA digital platforms should be able to generate a report/ dashboard based on the documents uploaded by beneficiary and approval of various stakeholders
1.181.	FIG/FPO/FP C/SHG	Receive	Completion/ Phase Completion	PD-ATMA should be able to issue the issuance of completion/phase completion certificate to FIG/FPO/FPC/SHG
1.182.	FIG/FPO/FP C/SHG	Submit	Feedback & Rating	FIG/FPO/FPC/SHG should be able to provide feedback and rating on the PoCRA digital platform
1.183.	AA/CA/M& E Agency	Submit	Impact/ Outcome	AA, CA should be able to record the outcome of the procurement, on the PoCRA digital platform as per the matrix defined by the PoCRA PMU
1.184.	FIG/FPO/FP C/SHG	Submit	Yearly Status	FIG/FPO/FPC/SHG should be able to submit/update yearly financial and physical status annually



## 2 Agri-Business and Value Chain Management Application

### 2.1 Overview (This Application is not in scope of RFB)

This Application comprises of functionalities to foster and strengthen the linkages between the external stakeholders (listed below). These stakeholders have diverse set of products and services which focus on adding value not only to the agricultural commodity but also the farmers and include the farmer support institutions such as FPO/FPC/FIG/SHG. Enabling two-way interactions, the portal provides a platform for information flow as well as transactional support such as that of an e-commerce platform. The various external stakeholders of the platform include:

- I. Agro-input dealers
- II. Manufacturers/ Suppliers (MS) (Includes Micro Irrigation System and Farm machinery)
- III. Warehouse markets, Cold storage and Packing (WCP)vendors/centres
- IV. Financial Institutions (FI)
- V. Certification Companies (CC)
- VI. Food processing units/ Retail stores/ Suppliers/ Re-seller (FRSR)
- VII. FPO/FPC/FIG/SHG (FFFS) and Farmers

Agri-Business and Value Chain Management application aims to provide end-to-end solutions to the farmers to focus on selected agricultural value chains that are key to farmer's livelihood and to provide market opportunities (income security) by developing comprehensive interventions and investments to promote value addition like custom hiring centres, support to FPCs for product aggregation, handling, transformation and marketing.

This application has been designed keeping the importance and potential of 'integration' in mind, such that the existing government portals support in the verification, authentication and registration process for the external stakeholders. Aspects of quality control, license registration, certification and other legal procedures would be diligently handled by the applicable government procedures through the relevant government platforms. Some of these platforms include e-Parvana, Mahabeej, e-Thibak, MSAMB etc., and have been detailed under section 2 of this document. Once registered in this portal, the PoCRA digital platform seeks to pull information from these stakeholders into the portal. However, external stakeholders should also register on the PoCRA portal, through which they would be able to make changes in their location information, inventory and other information which do not have any legal implications. These would be defined by the PoCRA PMU. A Content Management System would be in place for the external stakeholder to request for changes, wherein these change requests would have to be approved by the relevant authority. Once approved, these changes would be updated in the PoCRA digital platform.

The FRS for this application has been categorized into seven broad functionalities, differing in the kind of users, channels, nature of information and analysis. The objectives and functionalities with respect to each stakeholder have been listed under each component, followed by the FRSs.

The approach for this application has the potential to provide valuable information and linkages with the different stakeholders to strengthen the agriculture value chain.

This application aims to achieve the PDOs by contributing to an increase in farmers' participation in selected value chains through the support to FPCs/FIGs and the strengthening of FPC linkages with other actors in the value chains; and by promoting practices and technologies in post-harvest management and value-addition that support climate adaption and/or mitigation

## 2.2 Indicators

The following table depicts indicators used to measure the performance and efficacy of the activity, information and services provide by this application. A detailed understanding and narration of indicators alongwith component and sub-component wise indicator mapping can be found in annexure 11.1 and 11.2

Indicator type	Name of Indicator	Unit of measure	Frequency	Source
Project Development Objectives (PDO) indicators	Climate resilient agriculture: Improved yield uniformity and stability	Percentage	Spatial variability is measured at mid-term and at the end of the project implementation	POCRA MIS
	Farm income (ratio of farm income for women-headed HH with/without PoCRA)	Number	At mid-term and end-of-project implementation.	POCRA MIS
	Farmers reached with agricultural assets or services	Number	Semi-annual	POCRA MIS
Intermediate indicators	Project-supported Farmer Producer Companies with growth in annual profits	Number	Annual	PoCRA MIS

## 2.3 Features

Some of the common attributes that run through the application have been listed below:

- ▶ This application would have the provision for a moderated public platform, encouraging knowledge sharing and support from the Agri-department functionaries, PoCRA functionaries, KVK scientists and knowledge partners. This system would enable sharing of multimedia content on usage, pre-caution, warnings, repair, maintenance, DIY (Do-it-yourself) and success stories on different inputs required in different stages of farming.
- ▶ The users of this application would include a variety of internal and external stakeholders such as Agro-Input Dealers, Manufacturers/ Suppliers, Warehouse markets, Cold storage and Packing vendors/centres, Financial Institutions, Certification Companies, Food processing units/ Retail stores/ Suppliers/ Re-seller/ Food markets, FPO/FPC/FIG/SHG (FFFS), Farmers and PMU
- ▶ This application would provide payment gateway support for all users of this application to enable digital transactions.
- ▶ This application would have functionalities for integration with other central and state government portals such as e-Parvana, e-Thibak, MSAMB etc.

- Provision for ratings and feedback system would be incorporated in this system for capturing user experience. This would provide an information-led decision making tool to the PMU for taking necessary actions.

## 2.4 Functional Requirement Specifications (FRS)

### I. Agro-input dealers (AID)

From the perspective of the farmer and the agro-input dealers, this application would be able to provide functionality to the agro-input dealers such that they are able to upload authorized information of their products/goods including discounts, promotions, advertisements, and inventory. The features of this portal would allow the farmer to search on agro-input dealers, product catalogues with respect to his/her needs and get recommendations based on the information s/he provides to the application.

Aspects of Quality control, license registration, certification etc. would be handled by the relevant government website (RGW), examples include e-Parvana where AIDs would be able to register on the RGW and upload his/her information and list the products/goods/seeds s/he wishes to sell along with the pricing. After due verification by the RGW, the information would be available in the RGW. After these processes, the AIDs would be required to register on the PoCRA Portal.

Sr. No	User	Action	Object	Functional Description
2.1.	AID	Register	Relevant Government Website	The AID should be able to register through the Relevant Government Website (RGW)
2.2.	Relevant Government Website	Authorize	AID	The RGW should be able to authorize the AID based on the license, user, content, goods, services etc.
2.3.	AID	Register	PoCRA	The AID should be able to register on the PoCRA Portal and should be assigned a login ID and password by the PoCRA digital platform
2.4.	AID	Access	Relevant Government Website	The AID should be able to access the RGW after logging in to the PoCRA Portal via a link
2.5.	AID	Update	Relevant Government Website	AID should be able to register new products or service, by updating the details through the link provided in the PoCRA digital platform. These details would be verified by the RGW and then be updated in the PoCRA digital platform through a CMS (Content Management System)
2.6.	PoCRA digital platform	Create/Update	AID Profile	PoCRA digital platform should be able to create a profile for the AID as per logic prescribed by PoCRA PMU.

Sr. No	User	Action	Object	Functional Description
2.7.	AID	Update	Profile	AID should be able to make authorized changes (as per PoCRA logic) on the PoCRA Portal including but not limited to profile, address, inventory etc.
2.8.	AID	Update	CMS	Changes that require Government Authority for approval would be done via Content Management System in the PoCRA Portal, where the changes would be forwarded to relevant government authority. Example include adding a new product to the product catalogue.
2.9.	PoCRA digital platform	Forward	Relevant Government Authority	The PoCRA digital platform should be able to forward the updated content to relevant approval authority under the regulations defined by PoCRA
2.10.	PoCRA digital platform	Pull	CMS	PoCRA digital platform should be able to pull approved changes from relevant government database and update it on PoCRA Portal
2.11.	AID	Receive	Notification	PoCRA digital platform should be able to send acknowledgment of the changes/updates to AID via App/Email/SMS/Portal/and other channels
2.12.	PoCRA digital platform	Pull	AID Profile	The PoCRA digital platform should have the functionality to extract/pull data of registered AIDs from RGW such as e-Parvana.
2.13.	PoCRA digital platform	Maintain	Archived Records	PoCRA digital platform should be able to maintain archived records of AIDs post profile suspension/deletion/cancellation/withdrawal to ensure traceability
2.14.	AID	Upload	Informative content	AIDs should be able to post regulated informative content(videos etc.) on their product or service (including but not limited to) on the PoCRA Portal
2.15.	AID	Update	GIS System	AIDs should be able to geo-tag their location on the satellite-based GIS System
2.16.	AID	Upload	Promotions /Advertisement	AIDs should be able to advertise on the PoCRA Portal as per the regulations and norms defined by the PoCRA PMU
2.17.	AID	View	Investment Dashboard	AIDs should be able to view investments made by Central and State investments programs and Industry data on a dashboard
2.18.	Farmer/Authorized Stakeholders	View	AID	Famer should get a view of AIDs in his/her vicinity along with their geographic locations on a map view including phone numbers, address etc.
2.19.	Farmer/Authorized Stakeholders	View	AID	The farmer should be able to search according to selected parameters/filters such as, but not limited to product wise, AID wise, pricing wise etc.
2.20.	Farmer/Authorized Stakeholders	View	Schemes	Farmer should be able to view targeted schemes that are available for a specific product

Sr. No	User	Action	Object	Functional Description
2.21.	Farmer/Authorized Stakeholders	View	Product Pricing and Promotion	Farmer should be able to view pricing of products including discounts and other promotions/incentives offered by AIDs
2.22.	Farmer/Authorized Stakeholders	View	Ratings and Reviews	Farmer should be able to view ratings, feedback and review of products as well as AIDs
2.23.	Farmer/Authorized Stakeholders	Submit	Ratings	Farmer should be able to give ratings, feedback, and reviews to products as well as AIDs
2.24.	Farmer/Authorized Stakeholders	View	Moderated Public Forum	Farmer should be able to view multimedia content on usage, dosage, schedule, pre-caution, warnings, DIY(Do-it-yourself), success stories content on products uploaded by Agri-department/PoCRA functionaries/KVK on a Moderated Public Forum
2.25.	Farmer/Authorized Stakeholders	Post	Questions	Farmer should be able to post questions related to AIDs and products on a moderated public forum, which can be answered by other farmers, Agri-department/PoCRA functionaries/KVK
2.26.	DoA/PoCRA/KVK staff	Post	Moderated Public Forum	Agri-department/PoCRA functionaries/KVK should be able to answer the questions posted by farmer on AIDs and Products on a Moderated Public Forum and post advice and opinions on different products, brands, and vendors. These can be categorized as certified-response and non-certified response.
2.27.	DoA/PoCRA/KVK staff	Upload	Informative content	Agri-department/PoCRA functionaries/KVK should be able to post multimedia content on usage, dosage, schedule, pre-caution, warnings, DIY(Do-it-yourself) content on products available on the portal
2.28.	PMU	View	Inventory Dashboard	PMU should have a dashboard view of all the inventory of AIDs
2.29.	PMU	View	Products Dashboard	PMU should have a dashboard view of all the products that are government approved
2.30.	PMU	View	Feedback Dashboard	PMU should have a dashboard view of all feedback and purchase information of AIDs
2.31.	PMU	Raise	Alerts/Escalates	PMU should be able to raise alerts, escalations based actions on feedback of AIDs under the prescriptions made by PoCRA PMU
2.32.	PoCRA digital platform	Create	Payment Gateway	The PoCRA digital platform should provide payment gateway support for all users of this application to enable digital transactions.

## II. Manufacturers/ Suppliers (MS) (Includes Micro Irrigation System and Farm machinery)

From the perspective of the farmer and the manufacturers/suppliers, this application would be able to provide functionality to the manufacturers/suppliers such that they are able to upload authorized information of their products/goods and services including discounts, promotions, advertisements, and inventory. The features of this portal would allow the farmer to search for manufacturers/suppliers, product/goods and service catalogues with respect to his/her needs and get recommendations based on the information s/he provides to the PoCRA digital platform. One of the defining features of this category is that it allows for community-based sharing of resources such as farm machinery, wherein farmers who cannot afford expensive farm-machinery are able to make use of a machinery that can be rented-out by another farmer, who owns the machinery. In the context of PoCRA, these are called Custom-Hiring-Centres.

Aspects of Quality control, license registration, certification etc. would be handled by the relevant government website (RGW) examples include e-Thibak, e-Parvana, where manufacturers/suppliers (MS) would be able to register on the RGW and upload his/her information and list the products he/she wishes to sell along with the pricing. After due verification by the RGW, the information would be available in the RGW. After these processes, the MSs would be required to register on the PoCRA Portal.

Sr. No	User	Action	Object	Functional Description
2.33.	MS	Register	Relevant Government Website	The MS should be able to register through the Relevant Government Website (RGW)
2.34.	Relevant Government Website	Authorize	MS	The RGW should be able to authorize the MS based on the license, user, content, goods, services etc.
2.35.	MS	Register	PoCRA	The MS should be able to register on the PoCRA Portal and should be assigned a login ID and password by the PoCRA digital platform
2.36.	MS	Access	Relevant Government Website	The MS should be able to access the RGW after logging in through the PoCRA Portal via a link
2.37.	MS	Update	Relevant Government Website	MS should be able to register new products or service, by updating the details through the link provided in the PoCRA digital platform. These details would be verified by the RGW and then be updated in the PoCRA digital platform through a CMS (Content Management System)
2.38.	PoCRA digital	Create/Update	MS Profile	PoCRA digital platform should be able to create a profile for the MS as per logic prescribed by PoCRA PMU.

Sr. No	User	Action	Object	Functional Description
	platform			
2.39.	MS	Update	Profile	MS should be able to make authorized changes (as per PoCRA logic) on the PoCRA Portal including profile, address, inventory etc. , as prescribed by PoCRA
2.40.	MS	Update	CMS	Changes that require Government Authority for approval would be done via Content Management System in the PoCRA Portal, where the changes would be forwarded to relevant government authority. Example include adding a new product to the product catalogue.
2.41.	PoCRA digital platform	Forward	Relevant Government Authority	The PoCRA digital platform should be able to forward the updated content to relevant approval authority under the regulations defined by PoCRA
2.42.	PoCRA digital platform	Pull	CMS	PoCRA digital platform should be able to pull approved changes from relevant government database and update it on PoCRA Portal
2.43.	MS	Receive	Notification	PoCRA digital platform should be able to send acknowledgement of the changes/updates to MS via App/Email/SMS/Portal/and other channel
2.44.	PoCRA digital platform	Pull	MS Profile	The PoCRA digital platform should have the functionality to extract/pull data of registered MSs from RGW such as e-Parvana.
2.45.	PoCRA digital platform	Maintain	Archived Records	PoCRA digital platform should be able to maintain archived records of MSs post profile suspension/deletion/cancellation/withdrawal to ensure traceability
2.46.	MS	Upload	Informative content	MSs should be able to post regulated informative content(videos etc.) on their product or service (including but not limited to) on the PoCRA Portal
2.47.	MS	Update	GIS System	MSs should be able to geo-tag their location on the satellite-based GIS System
2.48.	MS	Upload	Promotions /Advertisement	MSs should be able to advertise on the PoCRA Portal as per the regulations and norms defined by the PoCRA PMU
2.49.	MS	View	Investment Dashboard	MSs should be able to view investments made by Central and State investments programs and Industry data on a dashboard
2.50.	Farmer/ Authorized	View	MS	Farmer should get a view of MSs in his/her vicinity along with their geographic locations on a map view including phone numbers, address etc.

Sr. No	User	Action	Object	Functional Description
	Stakeholders			
2.51.	Farmer/Authorized Stakeholders	View	MS	Farmer should be able to search according to selected parameters/filters such as, but not limited to product wise, MS-wise, pricing wise etc.
2.52.	Farmer/Authorized Stakeholders	View	Schemes	Farmer should be able to view targeted schemes that are available for a specific product/ machinery
2.53.	Farmer/Authorized Stakeholders	Receive	Recommendations	Farmer should be able to get personalised recommendations on products based on his/her crop type/location, or any other information entered by him/her on the PoCRA Portal
2.54.	Farmer/Authorized Stakeholders	View	Product Pricing and Promotion	Farmer should be able to view pricing of products including discounts and other promotions/incentives offered by MSs
2.55.	Farmer/Authorized Stakeholders	View	Ratings and Reviews	Farmer should be able to view ratings, feedback and review of products as well as MSs
2.56.	Farmer/Authorized Stakeholders	Submit	Ratings and Feedback	Farmer should be able to give ratings, feedback and reviews to products as well as MSs
2.57.	Farmer/Authorized Stakeholders	View	Moderated Public Forum	Farmer should be able to view multimedia content on usage, pre-caution, warnings, repair, maintenance, DIY(Do-it-yourself), success stories content on products uploaded by Agri-department/PoCRA functionaries/KVK on a Moderated Public Forum
2.58.	Farmer/Authorized Stakeholders	Post	Questions	Farmer should be able post questions related to MSs and products on a moderated public forum, which can be answered by other farmers, Agri-department/PoCRA functionaries/KVK
2.59.	DoA/PoCRA/KVK staff	Post	Moderated Public Forum	Agri-department/PoCRA functionaries/KVK should be able to answer the questions posted by farmer on MSs and Products on a Moderated Public Forum and



Sr. No	User	Action	Object	Functional Description
				post advice and opinions on different products, brands, and vendors
2.60.	DoA/PoCRA/KVK staff	Upload	Informative content	Agri-department/PoCRA functionaries/KVK should be able to post multimedia content on usage, dosage, schedule, pre-caution, warnings, DIY(Do-it-yourself) content on products available on the portal
2.61.	PMU	View	Inventory Dashboard	PMU should have a dashboard view of all the inventory of MSs
2.62.	PMU	View	Products Dashboard	PMU should have a dashboard view of all the products that are government approved
2.63.	PMU	View	Feedback Dashboard	PMU should have a dashboard view of all feedback and purchase information of MSs
2.64.	PMU	Raise	Alerts/Escalates	PMU should be able to raise alerts, escalations based actions on feedback and grievances on MSs under the prescriptions made by PoCRA PMU
2.65.	Farmer/FFFS/Authorized Stakeholders	Register	Custom Hiring Centre system	Farmers having farm machinery should be able to register on the platform to rent out their machinery, detailing the time of availability, pricing to be charged along with all terms and conditions and geo-tagging his/her location
2.66.	PoCRA Functionaries	Verify	Custom Hiring Centre system	PoCRA functionaries should be able to verify the details provided by the farmer and authenticate the information provided in the PoCRA digital platform
2.67.	Farmer/Beneficiary	Apply	Custom Hiring Centre system	Farmers should be able to view and book for available machinery along with obtaining information like rental charges, specifications and availability schedule on a FCFS bases (Custom Hiring Centre). Once the Farmer/Beneficiary receives the confirmation for the rental, the PoCRA digital platform should also make a provision for cancellation for a stipulated time-frame, if not adhered then provision for penalty should also be present.
2.68.	Farmer/FFFS/Authorized Stakeholders	Receive	Request	Farmers who have registered his/her machinery, should be able to get an approval request via SMS/IVR/Call Centre (or any other channel) for renting out machinery for the time period. Once approved or rejected a communication for the same should be communicated to the farmer who requested for services via SMS/IVR/call centre (or any other channel) and the PoCRA digital platform for making updates for machinery availability

Sr. No	User	Action	Object	Functional Description
2.69.	PoCRA digital platform	Update	Custom Hiring Centre system	The PoCRA digital platform should be able to update the availability schedules and reflect it in the CHC system.
2.70.	Farmer/Beneficiary/FFFS/Authorized Stakeholders	Input	Feedback	The users of the CHC should be able to file complaints, provide feedback on the services, service providers, users etc.
2.71.	PoCRA digital platform	Create	Payment Gateway	The PoCRA digital platform should provide payment gateway support for all users of this application to enable digital transactions.

### III. Warehouse markets, Cold storage, and Packing (WCP)vendors/ centres

From the perspective of the farmer and the warehouse markets, cold storage and packaging vendors/centres, this application would be able to provide functionality to the WCP vendors/ centres such that they are able to upload authorized information of their products, services, certifications, facilities including discounts, promotions, advertisements and storage inventory. The features of this portal would allow the farmer to search on WCP vendors/ centres, storage facility and service catalogues with respect to his/her needs and get recommendations basis the information s/he provides to the PoCRA digital platform. One of the defining features of this category is that it would allow for on-farm and community-based storage warehouse structures to be built and maintained by farmers/community to reduce post-harvest losses incurred by farmers and to encourage a local-need driven entrepreneurship model. The PoCRA digital platform would be able to support businesses, which are community/on-farm as well as for the established WCP vendors to list and manage their services through this portal.

Aspects of Quality control, license registration, certification etc. would be handled by the relevant government website (RGW) examples include WDRA (Warehouse Development and Regulatory Authority), e-Parvana, where WCPs would be able to register on the RGW and upload his/her information and list the vendors/centers along with facilities, pricing, and availability. After due verification by the RGW, the information would be available in the RGW. After these processes, the WCPs would be required to register on the PoCRA Portal.

Sr. No	User	Action	Object	Functional Description
2.72.	WCP	Register	Relevant Government Website	The WCP should be able to register through the Relevant Government Website (RGW)
2.73.	Relevant Government Website	Authorize	WCP	The RGW should be able to authorize the WCP based on the license, user, content, goods, services etc.
2.74.	WCP	Register	PoCRA	The WCP should be able to register on the PoCRA Portal and should be assigned a login ID and password by the PoCRA digital platform
2.75.	WCP	Access	Relevant Government Website	The WCP should be able to access the RGW after logging in to the PoCRA Portal via a link
2.76.	WCP	Update	Relevant Government Website	WCP should be able to register new vendors/ centers or service along with facilities, by updating the details through the link provided in the PoCRA digital platform. These details would be verified by the RGW and then be updated in the PoCRA digital platform through a CMS (Content Management System)
2.77.	PoCRA digital platform	Create/Update	WCP Profile	PoCRA digital platform should be able to create a profile for the WCP as per logic prescribed by PoCRA PMU.
2.78.	WCP	Update	Profile	WCP should be able to make authorized changes (as per PoCRA logic) on the PoCRA Portal including profile, address, inventory, availability etc. , as prescribed by PoCRA
2.79.	WCP	Update	CMS	Changes that require Government Authority for approval should be done via Content Management System in the PoCRA Portal, where the changes should be forwarded to relevant government authority. Example include adding a new packaging center/type to the catalogue.
2.80.	PoCRA digital platform	Forward	Relevant Government Authority	The PoCRA digital platform should be able to forward the updated content to relevant approval authority under the regulations defined by PoCRA
2.81.	PoCRA digital platform	Pull	CMS	PoCRA digital platform should be able to pull approved changes from relevant government database and update it on PoCRA Portal
2.82.	WCP	Receive	Notification	PoCRA digital platform should be able to send acknowledgment of the changes/updates to WCP via App/Email/SMS/Portal/and other channels
2.83.	PoCRA digital platform	Pull	WCP Profile	The PoCRA digital platform should have the functionality to extract/pull data of registered

Sr. No	User	Action	Object	Functional Description
				WCPs from RGW such as MSAMB, e-Parvana, e-Thibak
2.84.	PoCRA digital platform	Maintain	Archived Records	PoCRA digital platform should be able to maintain archived records of WCPs post profile suspension/deletion/cancellation/withdrawal to ensure traceability
2.85.	WCP	Upload	Informative content	WCPs should be able to post regulated informative content (videos etc.) on their centers, facilities or services (including but not limited to) on the PoCRA Portal
2.86.	WCP	Update	GIS System	WCPs should be able to geo-tag their location on the satellite-based GIS System
2.87.	WCP	Upload	Promotions/Advertisement	WCPs should be able to advertise on the PoCRA Portal as per the regulations and norms defined by the PoCRA PMU
2.88.	WCP	View	Investment Dashboard	WCPs should be able to view investments made by Central and State investments programs and Industry data on a dashboard
2.89.	Farmer/Authorized Stakeholders	View	WCP	Farmer should get a view of WCPs in his/her vicinity along with their geographic locations on a map view including phone numbers, address, available storage etc.
2.90.	Farmer/Authorized Stakeholders	View	WCP	Farmer should be able to search according to selected parameters/filters such as, but not limited to produce wise, WCP wise, pricing wise, facility wise, storage quantity wise, storage availability wise, certification wise etc.
2.91.	Farmer/Authorized Stakeholders	View	Schemes	Farmer should be able to view targeted schemes that are available for a specific produce, storage, facility, service etc. (including these but not limited to)
2.92.	Farmer/Authorized Stakeholders	Receive	Recommendations	Farmer should be able to get personalized recommendations on WCP centers/vendors/services/certifications based on his/her crop type/location, or any other information entered by him/her on the PoCRA Portal
2.93.	Farmer/Authorized Stakeholders	View	Product Pricing and Promotion	Farmer should be able to view pricing of storage/produce/packaging/services including discounts and other promotions/incentives offered by WCPs. Farmer should be able to view and avail combo services from WCP vendors/centers and logistic service providers
2.94.	Farmer/Authorized	View	Ratings and Reviews	Farmer should be able to view ratings, feedback and review of products as well as WCPs

Sr. No	User	Action	Object	Functional Description
	Stakeholders			
2.95.	Farmer/Authorized Stakeholders	Submit	Ratings	Farmer should be able to give ratings, feedback, and reviews to products as well as WCPs
2.96.	Farmer/Authorized Stakeholders	View	Moderated Public Forum	Farmer should be able to view multimedia content on usage, pre-caution, warnings, repair, maintenance, DIY(Do-it-yourself), success stories content on facility/storage/products uploaded by Agri-department/PoCRA functionaries/KVK on a Moderated Public Forum
2.97.	Farmer/Authorized Stakeholders	Post	Questions	Farmer should be able to post questions related to WCP and facility/storage/products on a moderated public forum, which can be answered by other farmers, Agri-department/PoCRA functionaries/KVK
2.98.	DoA/PoCRA/KVK staff	Post	Moderated Public Forum	Agri-department/PoCRA functionaries/KVK should be able to answer the questions posted by farmer on WCPs and Products on a Moderated Public Forum and post advice and opinions on different products, brands, and vendors
2.99.	DoA/PoCRA/KVK staff	Upload	Informative content	Agri-department/PoCRA functionaries/KVK should be able to post multimedia content on usage, pre-caution, warnings, repair, maintenance, DIY(Do-it-yourself) content on facility/storage/products/certifications available on the portal
2.100.	PMU	View	Inventory Dashboard	PMU should have a dashboard view of all the inventory of WCPs
2.101.	PMU	View	Products Dashboard	PMU should have a dashboard view of all the products that are government approved
2.102.	PMU	View	Feedback Dashboard	PMU should have a dashboard view of all feedback and purchase information of WCPs
2.103.	PMU	Raise	Alerts/Escalates	PMU should be able to raise alerts, escalations based actions on feedback on WCPs under the prescriptions made by PoCRA PMU
2.104.	Farmer/Authorized Stakeholders	View	Financial Institutions products and schemes	Farmer should be able to view Financial institutions schemes/products/loans and subsidies for construction of on-farm/community-level WCP centers
2.105.	Farmer/Authorized Stakeholders	View	Storage Dashboard	Farmer should get a dashboard view of his/her commodities stored at the WCP vendors/ centers

Sr. No	User	Action	Object	Functional Description
2.106.	Farmer/A uthorized Stakehol ders	Apply	WCP services	Farmer should be able to apply and request for storage and other services from all WCP vendors/ centers as well as farmers listed
2.107.	Farmer/A uthorized Stakehol ders	View	Policies	Farmer should be able to view policies and steps to be followed while developing and maintaining a storage center
2.108.	Farmer/A uthorized Stakehol ders	Register	WCP	Farmers should be able to register and maintain his/her on-farm/community level WCP center and list the services through the portal
2.109.	Farmer/A uthorized Stakehol ders	Create/Upd ate	WCP Profile	Farmer should be able to list her/her services facility along with the availability schedule, pricing, geotagged information etc.
2.110.	Farmer/A uthorized Stakehol ders	Submit	Approval/reje ction of Storage Request	Farmers should be able to accept/reject service requests from other farmers
2.111.	PoCRA digital platform	Create	Payment Gateway	The PoCRA digital platform should provide payment gateway support for all users of this application to enable digital transactions.

#### IV. Financial Institutions (FI)

The objective of this component is to provide information on the central and state investment ecosystem in agri-business and commodity value chains, for the various stakeholders most importantly the farmer. It focuses on the information around various schemes, services, loans, subsidies and would extend to provide information on the benefits, how to avail and recommendations based on the profile of the interested beneficiary.

Aspects of Quality control, license registration, certification etc. would be handled by the relevant government website (RGW), examples include micro finance organizations, banks, non-banking financial corporation. FIs would be able to register on the RGW and upload his/her information and list the financial products/schemes/loans/subsidies. After due verification by the RGW, the information would be available in the RGW. After these processes, the FIs would be required to register on the PoCRA Portal.

Sr. No	User	Action	Object	Functional Description
2.112.	FI	Register	Relevant Government Website	The FI should be able to register through the Relevant Government Website (RGW)
2.113.	Relevant Government Website	Authorize	FI	The RGW should be able to authorize the FI based on the license, user, content, services etc.
2.114.	FI	Register	PoCRA	The FI should be able to register on the PoCRA Portal and should be assigned a login ID and password by the PoCRA digital platform
2.115.	FI	Access	Relevant Government Website	The FI should be able to access the RGW after logging in to the PoCRA Portal via a link
2.116.	FI	Update	Relevant Government Website	FI should be able to register new schemes or services, financial products/schemes/loans/subsidies by updating the details through the link provided in the PoCRA digital platform. These details would be verified by the RGW and then be updated in the PoCRA digital platform through a CMS (Content Management System)
2.117.	PoCRA digital platform	Create/Update	FI Profile	PoCRA digital platform should be able to create a profile for the FI as per logic prescribed by PoCRA PMU.
2.118.	FI	Update	Profile	FI should be able to make authorized changes (as per PoCRA logic) on the PoCRA Portal including profile, address, inventory, availability etc., as prescribed by PoCRA, FI should be able to register on the portal and upload his/her information and financial products/schemes/loans/subsidies
2.119.	FI	Update	CMS	Changes that require Government Authority for approval should be done via Content Management System in the PoCRA Portal, where the changes should be forwarded to relevant government authority. Example include adding a new scheme to the catalogue.
2.120.	PoCRA digital platform	Forward	Relevant Government Authority	The PoCRA digital platform should be able to forward the updated content to relevant approval authority under the regulations defined by PoCRA
2.121.	PoCRA digital platform	Pull	CMS	PoCRA digital platform should be able to pull approved changes from relevant government database and update it on PoCRA Portal

Sr. No	User	Action	Object	Functional Description
2.122.	FI	Receive	Notification	PoCRA digital platform should be able to send acknowledgment of the changes/updates to FI via App/Email/SMS/Portal/and other channels
2.123.	PoCRA digital platform	Pull	FI Profile	The PoCRA digital platform should have the functionality to extract/pull data of registered FIs from RGW
2.124.	PoCRA digital platform	Maintain	Archived Records	PoCRA digital platform should be able to maintain archived records of FIs post profile suspension/deletion/cancellation/withdrawal to ensure traceability
2.125.	FI	Upload	Informative content	FIs should be able to post regulated informative content (videos etc.) on their financial products/schemes/loans/subsidies/Services/product (including but not limited to) on the PoCRA Portal
2.126.	FI	Update	GIS System	FIs should be able to geo-tag their location on the satellite-based GIS System
2.127.	FI	Upload	Promotions/Advertisement	FIs should be able to advertise on the PoCRA Portal as per the regulations and norms defined by the PoCRA PMU
2.128.	Farmer/Authorized Stakeholders	View	FI Policies	Farmer should be able to view policies applicable at all FIs
2.129.	Farmer/Authorized Stakeholders	View	FI	Famer should get a view of FIs in his/her vicinity along with their geographic locations on a map view including phone numbers, address etc.
2.130.	Farmer/Authorized Stakeholders	View	Schemes	Farmer should be able to view targeted financial products/schemes/loans/subsidies/Services/product etc. (as per logic defined by PoCRA)
2.131.	Farmer/Authorized Stakeholders	Receive	Recommendations	Farmer should be able to get personalised recommendations on financial products/schemes/loans/subsidies/Services/product based on his/her crop type/location, income, or any other information entered by him/her on the PoCRA Portal
2.132.	Farmer/Authorized Stakeholders	View	Product Pricing and Promotion	Farmer should be able to view pricing of financial products/schemes/loans/subsidies/Services/product including special discounts/offers and other promotions/incentives offered by FIs



Sr. No	User	Action	Object	Functional Description
2.133.	Farmer/ Authori zed Stakeho lders	View	Ratings and Reviews	Farmer should be able to view ratings, feedback and review of financial products/schemes/loans/subsidies/Services/product as well as FIs
2.134.	Farmer/ Authori zed Stakeho lders	Submit	Ratings	Farmer should be able to give ratings, feedback, and reviews to financial products/schemes/loans/subsidies/Services/product as well as FIs
2.135.	Farmer/ Authori zed Stakeho lders	View	Moderated Public Forum	Farmer should be able to view multimedia content on financial products/schemes/loans/subsidies/Services/product/success stories uploaded by Agri-department/PoCRA functionaries/KVK on a Moderated Public Forum
2.136.	Farmer/ Authori zed Stakeho lders	Post	Questions	Farmer should be able to post questions related to FI and financial products/schemes/loans/subsidies/Services/product on a moderated public forum, which can be answered by other farmers, Agri-department/PoCRA functionaries/KVK
2.137.	DoA/Po CRA/K VK staff	Post	Moderated Public Forum	Agri-department/PoCRA functionaries/KVK should be able to answer to the questions posted by farmer on FIs and financial products/schemes/loans/subsidies/Services/product on a Moderated Public Forum and post advice and opinions
2.138.	DoA/Po CRA/K VK staff	Upload	Informative content	Agri-department/PoCRA functionaries/KVK should be able to post multimedia content on financial products/schemes/loans/subsidies/Services/product/success stories content on the portal
2.139.	PMU	View	Inventory Dashboard	PMU should have a dashboard view of all the financial products/schemes/loans/subsidies/services/product and beneficiaries and status of FIs
2.140.	PMU	View	Products Dashboard	PMU should have a dashboard view of all the financial products/schemes/loans/subsidies/Services/products that are government approved
2.141.	PMU	Raise	Alerts/Escal ates	PMU should be able to raise alerts, escalations based actions on feedback on FIs under the prescriptions made by PoCRA PMU
2.142.	PoCRA digital platfor m	Create	Payment Gateway	The PoCRA digital platform should provide payment gateway support for all users of this PoCRA digital platform to enable digital transactions.

## V. Certification Companies (CC)

This component enables capturing of information, benefits, and procedures of availing certification with respect to a variety of activities such as storage, production etc. The idea is to provide to the farmer with the information to avail certifications as per his/her request, interest or recommendations provided by the PoCRA digital platform or functionaries. This would also allow for publishing informational content and e-learning modules for various certifications that would benefit the producers to obtain knowledge, benefits, and recognition. The PoCRA digital platform would be able to create a provision for the farmer to upload certifications availed by him/her into his profile, which would be viewed by other stakeholders.

Aspects of Quality control, license registration, certification etc. would be handled by the relevant government website (RGW), where CCs would be able to register on the RGW and upload his/her information and list the e-learning content, certifications they provide. Some of the examples of certification agencies include Onecert, APEDA etc. After due verification by the RGW, the information would be available in the RGW. After these processes, the CCs would be required to register on the PoCRA Portal.

Sr. No.	User	Action	Object	Functional Description - Profile creation and registration for certification companies (CC)
2.143.	CC	Register	Relevant Government Website	The CC should be able to register through the Relevant Government Website (RGW)
2.144.	Relevant Government Website	Authorize	CC	The RGW should be able to authorize the CC based on the license, user, content, services etc.
2.145.	CC	Register	PoCRA	The CC should be able to register on the PoCRA Portal and should be assigned a login ID and password by the PoCRA digital platform
2.146.	CC	Access	Relevant Government Website	The CC should be able to access the RGW after logging in to the PoCRA Portal via a link
2.147.	CC	Update	Relevant Government Website	CC should be able to register new e-learning schemes or certification services, by updating the details through the link provided in the PoCRA digital platform. These details would be verified by the RGW and then be updated in the PoCRA digital platform through a CMS (Content Management System)

2.148.	PoCRA digital platform	Create/Update	CC Profile	PoCRA digital platform should be able to create a profile for the CC as per logic prescribed by PoCRA PMU.
2.149.	CC	Update	Profile	CC should be able to make authorized changes (as per PoCRA logic) on the PoCRA Portal including profile, address etc., as prescribed by PoCRA, CC should be able to register on the portal and upload his/her information and e-learning schemes and certification services
2.150.	CC	Update	CMS	Changes that require Government Authority for approval should be done via Content Management System in the PoCRA Portal, where the changes should be forwarded to relevant government authority. Example include adding a new certification to the catalogue.
2.151.	PoCRA digital platform	Forward	Relevant Government Authority	The PoCRA digital platform should be able to forward the updated content to relevant approval authority under the regulations defined by PoCRA
2.152.	PoCRA digital platform	Pull	CMS	PoCRA digital platform should be able to pull approved changes from relevant government database and update it on PoCRA Portal
2.153.	CC	Receive	Notification	PoCRA digital platform should be able to send acknowledgment of the changes/updates to CC via App/Email/SMS/Portal/and other channels
2.154.	PoCRA digital platform	Pull	CC Profile	The PoCRA digital platform should have the functionality to extract/pull data of registered CCs from RGW
2.155.	PoCRA digital platform	Maintain	Archived Records	PoCRA digital platform should be able to maintain archived records of CCs post profile suspension/deletion/cancellation/withdrawal to ensure traceability
2.156.	CC	Upload	Informative content	FIs should be able to post regulated informative content (videos etc.) on their e-learning schemes and certification services (including but not limited to) on the PoCRA Portal
2.157.	CC	Update	GIS System	CCs should be able to geo-tag their location on the satellite-based GIS System

2.158.	CC	Upload	Promotions/Advertisement	CCs should be able to advertise on the PoCRA Portal as per the regulations and norms defined by the PoCRA PMU
2.159.	Farmer/Authorized Stakeholders	View	Policies	Farmer should be able to view policies applicable at CCs
2.160.	Farmer/Authorized Stakeholders	View	CC	Famer should get a view of CCs in his/her vicinity along with their geographic locations on a map view including phone numbers, address etc.
2.161.	Farmer/Authorized Stakeholders	View	CC	Farmer should be able to search according to selected parameters/filters such as, but not limited to certification wise, produce-wise, pricing wise etc. Farmer should be able to view information on certification at various levels such as primary, storage and processing and climate-smart processing technologies
2.162.	Farmer/Authorized Stakeholders	View	Schemes	Farmer should be able to view targeted e-learning schemes and certification services etc. (as per logic defined by PoCRA)
2.163.	Farmer/Authorized Stakeholders	Receive	Recommendations	Farmer should be able to get personalised recommendations on e-learning schemes and certification services based on his/her crop type/location, income, or any other information entered by him/her on the PoCRA Portal
2.164.	Farmer/Authorized Stakeholders	View	Product Pricing and Promotion	Farmer should be able to view pricing of e-learning schemes and certification services including special discounts/offers and other promotions/incentives offered by CCs
2.165.	Farmer/Authorized Stakeholders	View	Ratings and Reviews	Farmer should be able to view ratings, feedback and review of e-learning schemes and certification services as well as CCs
2.166.	Farmer/Authorized	Submit	Ratings	Farmer should be able to give ratings, feedback, and reviews to e-learning schemes and certification services as well as CCs

	Stakeholders			
2.167.	Farmer/Authorized Stakeholders	View	Moderated Public Forum	Farmer should be able to view multimedia content on e-learning, certification procedure, success stories uploaded by Agri-department/PoCRA functionaries/KVK on a Moderated Public Forum
2.168.	Farmer/Authorized Stakeholders	Post	Questions	Farmer should be able to post questions related to e-learning schemes and certification services on a moderated public forum, which can be answered by other farmers, Agri-department/PoCRA functionaries/KVK
2.169.	DoA/PoCRA/KVK staff	Post	Moderated Public Forum	Agri-department/PoCRA functionaries/KVK should be able to answer the questions posted by farmer on CCs and e-learning schemes and certification services on a Moderated Public Forum and post advice and opinions
2.170.	DoA/PoCRA/KVK staff	Upload	Informative content	Agri-department/PoCRA functionaries/KVK should be able to post multimedia content on financial products/schemes/loans/subsidies/Services/product/success stories content on the portal
2.171.	PMU	View	Inventory Dashboard	PMU should have a dashboard view of all the e-learning schemes, certification services, beneficiaries and status of CCs
2.172.	PMU	View	Certification Dashboard	PMU should have a dashboard view of all the e-learning schemes and certification services that are government approved
2.173.	PMU	View	Feedback Dashboard	PMU should have a dashboard view of all feedback and beneficiary information of CCs
2.174.	PMU	Raise	Alerts/Escalates	PMU should be able to raise alerts, escalations based actions on feedback on CCs under the prescriptions made by PoCRA PMU
2.175.	Farmer/Authorized Stakeholders	Upload	Certification on Profile	Farmer should be able to upload certificates to his/her profile from the RGW
2.176.	PMU	Update	Certification on Profile	PMU should approve the certifications uploaded by the Farmer based on data from RGW

2.177.	PoCRA Functionaries	Recommend	Certification	PoCRA functionaries should be able to recommend e-learning training to farmer for relevant certifications, PoCRA digital platform should be able to capture this information.
2.178.	PoCRA digital platform	Create	Payment Gateway	The PoCRA digital platform should provide payment gateway support for all users of this application to enable digital transactions.

## VI. Food processing units/ Retail stores/ Suppliers/ Re-seller /Food Markets(FRSR)

This component would focus on plugging in the information gap between market prices, farmer's produce and food markets. The objective of this component is to enable the farmer to make informed decisions with respect to the price s/he can expect to get, the location that s/he wishes to sell at, the current prices of the produce and the supplier they wish to sell to. This platform seeks to enable the producer as well as the Food processing units/ Retail stores/ Suppliers/ Re-seller to obtain information on the quality, grading, expected quantity of produce, before the crop-harvest time such that post-harvest losses can be reduced and that farmer would be able to get a fair price for his produce. Contact information would be provided in the portal to allow for communication and price negotiations between the trading parties. Farmer's profile would capture what the farmers are growing and would enable pro-active decision making at the PMU level to support in contingency plans in case of bulk produce or other relevant factors. Another important functionality supported by this component would include a map view of the farmers in the vicinity with their contact information which would enable collaboration and business opportunities with other small and marginal farmers, increasing bargaining capability, quantity and better prices.

Aspects of Quality control, license registration, certification etc. would be handled by the relevant government website (RGW) where FRSRs would be able to register on the RGW and upload his/her information and list their information. After due verification by the RGW, the information would be available in the RGW. After these processes, the FRSRS would be required to register on the PoCRA Portal. Some of the public service databases from where information will be pulled include e-Nam, e-Mandi, MSMB, etc.

Sr.No.	User	Action	Object	Functional Description - Profile creation and registration for Food processing units/ Retail stores/ Suppliers/ Re-seller/Food Markets (FRSR)
2.179.	FRSR	Register	Relevant Government Website	The FRSR should be able to register through the Relevant Government Website (RGW)
2.180.	Relevant Governm	Authorize	FRSR	The RGW should be able to authorize the FRSR based on the license, user, goods, services, location, certifications etc.

Sr.No.	User	Action	Object	Functional Description - Profile creation and registration for Food processing units/ Retail stores/ Suppliers/ Reseller/Food Markets (FRSR)
	ent Website			
2.181.	FRSR	Register	PoCRA	The FRSR should be able to register on the PoCRA Portal and should be assigned a login ID and password by the PoCRA digital platform
2.182.	FRSR	Access	Relevant Government Website	The FRSR should be able to access the RGW after logging in to the PoCRA Portal via a link
2.183.	FRSR	Update	Relevant Government Website	FRSR should be able to register new service by updating the details through the link provided in the PoCRA digital platform. These details would be verified by the RGW and then be updated in the PoCRA digital platform through a CMS (Content Management System)
2.184.	PoCRA digital platform	Create /Update	FRSR Profile	PoCRA digital platform should be able to create a profile for the FRSR as per logic prescribed by PoCRA PMU.
2.185.	FRSR	Update	Profile	FRSR should be able to make authorized changes (as per PoCRA logic) on the PoCRA Portal including profile, address etc. , as prescribed by PoCRA
2.186.	FRSR	Update	CMS	Changes that require Government Authority for approval should be done via Content Management System in the PoCRA Portal, where the changes should be forwarded to relevant government authority.
2.187.	PoCRA digital platform	Forward	Relevant Government Authority	The PoCRA digital platform should be able to forward the updated content to relevant approval authority under the regulations defined by PoCRA
2.188.	PoCRA digital platform	Pull	CMS	PoCRA digital platform should be able to pull approved changes from relevant government database and update it on PoCRA Portal
2.189.	FRSR	Receive	Notification	PoCRA digital platform should be able to send acknowledgment of the changes/updates to FRSR via App/Email/SMS/Portal/and other channels
2.190.	PoCRA digital platform	Pull	FRSR Profile	The PoCRA digital platform should have the functionality to extract/pull data of registered FRSRs from RGW
2.191.	PoCRA digital platform	Maintain	Archived Records	PoCRA digital platform should be able to maintain archived records of FRSRs post profile

Sr.No.	User	Action	Object	Functional Description - Profile creation and registration for Food processing units/ Retail stores/ Suppliers/ Reseller/Food Markets (FRSR)
				suspension/deletion/cancellation/withdrawal to ensure traceability
2.192.	FRSR	Upload	Informative content	FRSRs should be able to post regulated informative content (videos etc.) on their centers, facilities or services (including but not limited to) on the PoCRA Portal
2.193.	FRSR	Update	GIS System	FRSRs should be able to geo-tag their location on the satellite-based GIS System
2.194.	FRSR	Upload	Promotions/ Advertisement	FRSRs should be able to advertise on the PoCRA Portal as per the regulations and norms defined by the PoCRA PMU
2.195.	FRSR	View	Investment Dashboard	FRSRs should be able to view investments made by Central and State investments programs and Industry data on a dashboard
2.196.	FRSR	Upload	Requirements	FRSR should be able to list their requirements with grading and certifications (if required) on the portal on which the farmer/FFFS can submit his/her interest to sell and request for quote
2.197.	FRSR	Upload	Quotation	FRSR should be able to quote (bid) a price for the products they intend to procure and this information should be visible to the farmers/FFFS/PoCRA functionaries
2.198.	FRSR	View	Farmers Profile	FRSR should be able to search produce wise/location wise farmers (e.g. all farmers selling tur in Latur) which should list out farmer's contact information, the quantity of produce. Certification, grading, etc.
2.199.	Farmer/ Authorized Stakeholders	View	FRSR	Famer should get a view of FRSRs in his/her vicinity along with their geographic locations on a map view including phone numbers, address etc.
2.200.	Farmer/ Authorized Stakeholders	View	FRSR	Farmer/PoCRA functionaries should be able to view profile of all FRSR, contact information including their website and a dashboard view tracking the no. of transactions, (which would be agreed by both trading parties) done by the FRSR and the products they trade in
2.201.	Farmer/ Authorized Stakeholders	View	FRSR	Farmer should be able to search according to selected parameters/filters such as, but not limited to produce wise, pricing wise, facility wise, quantity wise, location wise, certification wise etc.



Sr.No.	User	Action	Object	Functional Description - Profile creation and registration for Food processing units/ Retail stores/ Suppliers/ Reseller/Food Markets (FRSR)
2.202.	Farmer/ Authorized Stakeholders	View	FRSR	Farmer should be able to view commodity wise trading cost quoted by all FRSR including other promotions/incentives offered by FRSR. Farmer can avail combo services from FRSR and logistic service providers
2.203.	Farmer/ Authorized Stakeholders	Update	Profile	Farmer should be able to list his/her produce, quantity, expected harvest time, quality/grading, certification etc. along with his/her contact details which can be viewed by the FRSR/user
2.204.	Farmer/ Authorized Stakeholders	Receive	Recommendations	Farmer should be able to get personalised recommendations on FRSR centers/vendors based on his/her crop type/location, or any other information entered by him/her on the PoCRA Portal
2.205.	Farmer/ Authorized Stakeholders	View	Product Pricing and Promotion	Farmer should be able to view commodity wise trading cost quoted by all FRSR including other promotions/incentives offered by FRSR
2.206.	Farmer/ Authorized Stakeholders	View	Ratings and Reviews	Farmer should be able to view ratings, feedback and review of products/services as well as FRSRs
2.207.	Farmer/ Authorized Stakeholders	Submit	Ratings	Farmer should be able to give ratings, feedback, and reviews to products as well as FRSRs
2.208.	Farmer/ Authorized Stakeholders	View	Policy	Farmer should be able to view policies of all FRSR
2.209.	Farmer/ Authorized Stakeholders	Post	Questions	Farmer should be able to post questions related to FRSR and services on a moderated public forum, which can be answered by other farmers, Agri-department/PoCRA functionaries/KVK. Farmer should be able to get advisory about commodity selling and opinions on different FRSR

Sr.No.	User	Action	Object	Functional Description - Profile creation and registration for Food processing units/ Retail stores/ Suppliers/ Reseller/Food Markets (FRSR)
2.210.	DoA/Po CRA/KVK staff	Post	Moderated Public Forum	Agri-department/PoCRA functionaries/KVK should be able to answer the questions posted by farmer on FRSRs and Services on a Moderated Public Forum and post advice and opinions on different centers and vendors.
2.211.	Farmer/ Authorized Stakeholders	View	Market wise, commodity prices	PoCRA digital platform should be able to capture data from various public service databases like e-Nam, e-Mandi, MSMB, etc. which can be viewed by users to view market prices. The PoCRA digital platform should be able to display a graphical view of location-specific commodity prices, ranging in time as specified by PoCRA PMU
2.212.	Farmer/ Authorized Stakeholders	View	Recommendations	Farmer should be able to get recommendations based on the information provided by him/her on the best prices for the produce and the location to sell off the produce
2.213.	Farmer/ Authorized Stakeholders	View	Farmers profile	Farmer should get a map view of farmers in his/her district along with information on what they are growing/selling and a communication channel/blog through which farmers can contact each other for business opportunities on merging the produce to sell or other opportunities
2.214.	Farmer/ Authorized Stakeholders	Update	Profile	Farmer should be able to update the price at which they sell or plan to sell their produce which would be viewed by PMU to make informed decisions and contingency plans
2.215.	Farmer/ Authorized Stakeholders	View	Mandi	Farmer should get a map view of all small mandis/markets/informal markets in his/her district along with the daily prices offered
2.216.	Farmer/ Authorized Stakeholders	View	Storage Dashboard	Farmer should get a dashboard view of his/her commodities traded with the FRSR vendors/ centers, mandis
2.217.	PMU	View	FRSR Dashboard	PMU should have a dashboard view of all the transactions, certifications, services of FRSRs
2.218.	PMU	View	Feedback Dashboard	PMU should have a dashboard view of all feedback and trading information of FRSRs

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Sr.No.	User	Action	Object	Functional Description - Profile creation and registration for Food processing units/ Retail stores/ Suppliers/ Reseller/Food Markets (FRSR)
2.219.	PMU	Raise	Alerts/Escalates	PMU should be able to raise alerts, escalations based actions on feedback on FRSRs under the prescriptions made by PoCRA PMU
2.220.	PoCRA digital platform	Create	Payment Gateway	The PoCRA digital platform should provide payment gateway support for all users of this application to enable digital transactions.

## VII. FPO/FPC/FIG/SHG (FFFS) and Farmers

This component highlights PoCRA digital platform provisions for the FFFS and the farmer. The objective of this component is to enable the institutions such as FFFS to register their organisation on the portal and for the interested farmers to obtain information on the services provided by FFFS. This platform seeks to help the farmer based organisations to get visibility for their business.

Aspects of Quality control, license registration, certification etc. would be handled by the relevant government website (RGW) examples include e-Parvana, where FFFSs would be able to register on the RGW and upload his/her information and list the products/goods/seeds he/she wishes to sell along with the pricing. After due verification by the RGW, the information would be available in the RGW. After these processes, the FFFS would be required to register on the PoCRA Portal.

Sr. No.	User	Action	Object	Functional Description - Profile creation and registration
2.221.	FIG/FPO/FP C/SHG	Register	Relevant Governm ent Website	The FFFS should be able to register through the Relevant Government Website (RGW)
2.222.	Relevant Government Website	Authoriz e	FFFS	The RGW should be able to authorize the FFFS based on the license, user, content, goods, services etc.
2.223.	FIG/FPO/FP C/SHG	Register	PoCRA	The FFFS should be able to register on the PoCRA Portal and should be assigned a login ID and password by the PoCRA digital platform
2.224.	FIG/FPO/FP C/SHG	Access	Relevant Governm ent Website	The FFFS should be able to access the RGW after logging in to the PoCRA Portal via a link
2.225.	FIG/FPO/FP C/SHG	Update	Relevant Governm ent Website	FFFS should be able to register new products or service, by updating the details through the link provided in the PoCRA digital platform. These details would be verified by the RGW and then be updated in the PoCRA digital platform through a CMS (Content Management System)
2.226.	PoCRA digital platform	Create/U pdate	FFFS Profile	PoCRA digital platform will create a profile for the FFFS as per logic prescribed by PoCRA PMU.
2.227.	FIG/FPO/FP C/SHG	Update	Profile	FFFS should be able to make authorized changes (as per PoCRA logic) on the PoCRA Portal including but not limited to profile, address, inventory etc.
2.228.	FIG/FPO/FP C/SHG	Update	CMS	Changes that require Government Authority for approval should be done via Content Management System in the PoCRA Portal, where the changes should be forwarded to

Sr. No.	User	Action	Object	Functional Description - Profile creation and registration
				relevant government authority. Example include adding a new product to the product catalogue.
2.229.	PoCRA digital platform	Forward	Relevant Government Authority	The PoCRA digital platform should be able to forward the updated content to relevant approval authority under the regulations defined by PoCRA
2.230.	PoCRA digital platform	Pull	CMS	PoCRA digital platform should be able to pull approved changes from relevant government database and update it on PoCRA Portal
2.231.	FIG/FPO/FP C/SHG	Receive	Notification	PoCRA digital platform should be able to send acknowledgement of the changes/updates to FFFS via App/Email/SMS/Portal/and other channel
2.232.	PoCRA digital platform	Pull	FFFS Profile	The PoCRA digital platform should have the functionality to extract/pull data of registered FFFSs from RGW
2.233.	PoCRA digital platform	Maintain	Archived Records	PoCRA digital platform should be able to maintain archived records of FFFSs post profile suspension/deletion/cancellation/withdrawal to ensure traceability
2.234.	FIG/FPO/FP C/SHG	Register	AID	FFFS should be able to register themselves as an Agro Input Dealer as per logic prescribed by PoCRA
2.235.	FIG/FPO/FP C/SHG	Upload	Informative content	FFFSs should be able to post regulated informative content(videos etc.) on their product or service (including but not limited to) on the PoCRA Portal
2.236.	FIG/FPO/FP C/SHG	Update	GIS System	FFFSs should be able to geo-tag their location on the satellite-based GIS System
2.237.	FIG/FPO/FP C/SHG	Upload	Promotions/Advertisement	FFFSs should be able to advertise on the PoCRA Portal as per the regulations and norms defined by the PoCRA PMU
2.238.	FIG/FPO/FP C/SHG	View	Investment Dashboard	FFFSs should be able to view investments made by Central and State investments programs and Industry data on a dashboard
2.239.	FIG/FPO/FP C/SHG	View	Members Dashboard	FFFS should have a dashboard view of all the group members, their information including produce, certifications, skills, expected yield etc.
2.240.	FIG/FPO/FP C/SHG	Create	Webpage	FFFS should be able to create their respective webpages and their link should be able to be published on the PoCRA digital platform
2.241.	FIG/FPO/FP C/SHG	View	FFFS	FFFS should have a dashboard/map view of all the FFFS district-wise with their contact information and other details

Sr. No.	User	Action	Object	Functional Description - Profile creation and registration
2.242.	Farmer/Authorized Stakeholders	View	FFFS	Famer should get a view of FFFSs in his/her vicinity along with their geographic locations on a map view including phone numbers, address etc.
2.243.	Farmer/Authorized Stakeholders	View	FFFS	Farmer should be able to search according to selected parameters/filters such as, but not limited to product wise, FFFS wise, pricing wise etc.
2.244.	Farmer/Authorized Stakeholders	View	Product Pricing and Promotion	Farmer should be able to view pricing of products including discounts and other promotions/incentives offered by FFFSs
2.245.	Farmer/Authorized Stakeholders	View	Moderated Public Forum	Farmer should be able to view multimedia content on usage, dosage, schedule, pre-caution, warnings, DIY(Do-it-yourself), success stories content on products uploaded by Agri-department/PoCRA functionaries/KVK on a Moderated Public Forum
2.246.	Farmer/Authorized Stakeholders	Post	Questions	Farmer should be able post questions related to FFFSs and products on a moderated public forum, which can be answered by other farmers, Agri-department/PoCRA functionaries/KVK
2.247.	DoA/PoCRA/KVK staff	Post	Moderated Public Forum	Agri-department/PoCRA functionaries/KVK should be able to answer to the questions posted by farmer on FFFSs and Products on a Moderated Public Forum and post advice and opinions on different products, brands and vendors
2.248.	Farmer/Authorized Stakeholders	Upload	Grading Certificates	Farmers/ Authorized stakeholders should be able to upload grading certificates for their commodities (Similar to e-NAM grading) to the PoCRA platform
2.249.	Farmer/Authorized Stakeholders	View	Grading Centers	Farmers/Authorized stakeholders should be able to view grading centers by APMC, e-NAM and other government schemes on a GIS map
2.250.	DoA/PoCRA/KVK staff	Upload	Informative content	Agri-department/PoCRA functionaries/KVK should be able to post multimedia content on usage, dosage, schedule, pre-caution, warnings, DIY(Do-it-yourself) content on products available on the portal
2.251.	PoCRA digital platform	Create	Payment Gateway	The PoCRA digital platform should provide payment gateway support for all users of this application to enable digital transactions.

### 3 Agriculture Extension Services application

#### 3.1 Overview

This application comprises functionalities that support the training and development of farmers and other stakeholders in the application. The objective of this application is to strengthen the knowledge and skills of the primary executioner, the farmer and equipping and advancing their skills on climate resilient agricultural practices.

One of the fundamental knowledge source for carving out the extension plan is through the findings of the Strategic Research and Extension Plan (SREPs). The SREPs are prepared by a holistic research on the different dimensions present in a rural and agriculture based economy. Techniques of participatory rural appraisal are combined with the understanding of the factors in each agro climatic zones. With this knowledge, localized need-based extension plans are formulated including training modules for FFS and functionaries, contingency plans etc. in the context of climate change agro practices.

Some of these modules and practical demo sessions would include soil management, water management, latest agriculture technologies, with the objective of equipping farmers in the skills and knowledge on climate smart agriculture. KVK scientist and experts would be able to demonstrate innovative/best practices at the different crop stages including new technologies, farm machineries which would be monitored by the help of this application.

Apart from the trainings based on ‘Lab to Land’, the application would also provide functionalities to upload demos, articles, research and other material by a host of organizations like State Agriculture Universities, Public Organizations like CRIDA, YASHDA and Knowledge partners. This information through this platform would be able to reach farmers and other stakeholders. This information through this platform would be disseminated to farmers using a comprehensive communication strategy using multiple channels like mass media, social media, audio-video material, etc.

The FRS for this module has been categorised into three sub categories: (i) Training, (ii) Farmer Field School and (iii) E-Learning and Best Practices. The objectives of each of these categories, along with their detailed FRS have been listed below.

### 3.2 Indicators

The following table depicts indicators used to measure the performance and efficacy of the activity, information and services provide by this application. A detailed understanding and narration of indicators alongwith component and sub-component wise indicator mapping can be found in annexure 11.1 and 11.2

Indicator type	Name of Indicator	Unit of measure	Frequency	Source
Project Development Objectives (PDO) indicators	Climate resilient agriculture: Increase in water productivity at farm level	Percentage	Annual (After 3 year)	POCRA MIS
	Climate resilient agriculture: Improved yield uniformity and stability	Percentage	Spatial variability is measured at mid-term and at the end of the project implementation	POCRA MIS
	Net greenhouse gas emissions	Tonnes/year	End of the project	EX ACT model
	Farm income (ratio of farm income for women-headed HH with/without PoCRA)	Number	At mid-term and end-of-project implementation.	POCRA MIS
	Farmers reached with agricultural assets or services	Number	Semi-annual	POCRA MIS
Intermediate indicators	Farmers adopting improved agricultural technology	Number	Annual	POCRA MIS
	Climate resilient agriculture: Area with GAPs for improved management of saline and sodic soils (enhanced soil health)	Hectare (ha)	Semi-annual	POCRA MIS
	Project-supported Farmer Producer Companies with growth in annual profits	Number	Annual	PoCRA MIS
	Strategic Research and Extension Programs (SREP) with internalized climate resilience agenda	Number	Annual (Year 2 onwards)	ATMA
	Clients receiving services from the MH Climate Innovation Center	Number	Annual (Year 4 onwards)	CIC Annual Report



### 3.3 Features

The broad functionalities of this application have been listed below:

- ▶ This application would enable farmers to view training and FFS calendar and nominate themselves for trainings and FFS
- ▶ This application would enable farmers to get timely reminders and alerts about upcoming trainings and trainings happening in their vicinity
- ▶ This application would allow Trainers and Trainees to provide a feedback on each training and FFS
- ▶ This application would provide information on best practices for managing climate shifts, water management, soil management, which would be disseminated to farmers

### 3.4 Functional Requirement Specifications (FRS)

#### I. Training:

Under this component, appointed agencies would conduct training needs-assessment and prepare a training schedule and calendar which would be published on the PoCRA digital platform. Farmers would be able to nominate themselves for a training and PoCRA authorized stakeholders would also be able to nominate farmers for a training. This application would enable farmers to get alerts of trainings happening in their vicinity and about upcoming trainings. It captures the details of the trainings that would be conducted for PoCRA stakeholders and appointed agencies. One of the most important functionality of this application is the feedback that the farmer would be able to submit post the training around the trainer, training content, infrastructure support and other parameters. The Trainer would be able to give a feedback and also upload an attendance list, photographs and videos of the training. Trainer would also be able to upload literature and documents related to the training which can be accessed by all trainees

Sr. No.	User	Action	Object	Functional Description
3.1.	PoCRA appointed personnel	Upload	Training Report	PoCRA appointed personnel (Yashada/Vanamati) should be able to upload a training need and assessment report on the PoCRA digital platform
3.2.	PoCRA appointed personnel	Upload	Training Calendar	PoCRA appointed personnel (Yashada/Vanamati) should be able to upload a training calendar on the PoCRA digital platform
3.3.	PMU	Create/Update	Yearly Training Calendar	PMU should be able to publish a Yearly training calendar on the PoCRA portal which can be accessed by farmers and authorized stakeholders
3.4.	PMU	Create/Update	Monthly Training Calendar	PMU/Application should be able to publish a monthly training calendar on the PoCRA portal from the yearly calendar and other relevant resources

Sr. No.	User	Action	Object	Functional Description
3.5.	Farmer/Authorized Stakeholders	Receive	Monthly Training Calendar	Application should be able to send the monthly training calendar with village/district names to farmers and authorized stakeholders via SMS/App/Email/Call and any other channel as prescribed by PoCRA
3.6.	Farmer/Authorized Stakeholders	Receive	Monthly Training Calendar	Application should be able to send a monthly training calendar to all farmers and authorized stakeholders at the start of the month with district/village name along with nomination options via SMS/App/Email/Call and any other channel as prescribed by PoCRA
3.7.	PMU/Authorized stakeholder	Update	Yearly/Monthly Training Calendar	PMU/Authorized stakeholder should be able to update monthly and yearly training calendars as and when required
3.8.	Farmer/Authorized Stakeholders	Submit	Training Request	Farmers and authorized stakeholders should be able to submit training requests
3.9.	Farmer/Authorized Stakeholders	Receive	Alerts & Reminders	Application should be able to send notifications and alerts to farmers and authorized stakeholders about upcoming trainings
3.10.	Farmer/Authorized Stakeholders	Submit	Training Nomination	Farmer/Authorized stakeholders should be able to nominate themselves for trainings
3.11.	PMU/Authorized stakeholder	Submit	Training Nomination	Authorized stakeholders and PMU should be able to nominate relevant farmers/ other stakeholders for a training
3.12.	Farmer/Authorized Stakeholders	Receive	Training nomination acknowledgment	Application should be able to send an acknowledgment to farmer/ authorized stakeholder about his/her nomination
3.13.	PoCRA digital platform	Authenticate	Third party nomination	In case of third party nominations, application should be able to authenticate training nominations via SMS or other channels as prescribed by PoCRA
3.14.	PMU/Authorized stakeholder	Approve/Reject	Training Nomination	PMU/ Authorized stakeholders should be able to approve/reject training nominations of farmers/ other stakeholder
3.15.	PMU	Upload	Trainee List	PMU should be able to upload the finalised list of trainees based on PoCRA logic

Sr. No.	User	Action	Object	Functional Description
3.16.	Farmer/Authorized Stakeholders	Receive	Training Confirmation	Application should be able to send training confirmation to selected trainees along with venue, date, time and other details via SMS/App/Email/Call and any other channel as prescribed by PoCRA
3.17.	PMU/Authorized stakeholder	Submit	Trainer	PMU/ Authorized Stakeholder should be able to enter trainer details on the PoCRA digital platform
3.18.	Trainer	Receive	Training Confirmation	Application should be able to send training confirmation along with all needed details to the trainers via SMS/App/Email/Call and any other channel as prescribed by PoCRA
3.19.	Trainer/Trainee	Receive	Alerts & Reminders	Application should be able to send timely reminders and alerts to the selected trainees and trainer about the training via SMS/App/Email and other channels as prescribed by PoCRA
3.20.	Trainer	Update	Training Requirement	Trainer should be able to update training requirements on the portal or via SMS/App/Email/Call and any other channel as prescribed by PoCRA
3.21.	Trainer	Upload	Training Module	Trainer should be able to upload training module and/or any other notes on the PoCRA portal
3.22.	Trainer/Trainee	Receive	Training Confirmation	Application should be able to send the geo-tagged location of the training venue to all trainees and trainer
3.23.	Trainer	Receive	Trainee List	Application should send the confirmed attendance list to the trainer via SMS/App/Email/Call and any other channel as prescribed by PoCRA. This list should be available to the trainer before the FFS
3.24.	Trainer	Upload	Photographs & Videos	Trainer should be able to upload Photographs & Videos of the training conducted
3.25.	Trainer	Upload	Attendance List	Trainer/Authorized stakeholder should be able to capture and upload the signed/stamped training attendance list on the portal
3.26.	Trainer/PoCRA appointed personnel / Authorized	Upload	Training Literature	Trainer/ PoCRA appointed personnel /Authorized stakeholder should be able to upload literature and/or documents related to the training on the PoCRA digital platform

Sr. No.	User	Action	Object	Functional Description
	Stakeholder			
3.27.	Farmer/Authorized Stakeholders	Receive	Training Literature	Application should be able to send training literature to farmer/ Authorized stakeholder via App/Email and any other channel prescribed by PoCRA
3.28.	Farmer/Authorized Stakeholders	View	Training Dashboard	Farmer should get a dashboard view of his/her training history, upcoming trainings, associated documents and other details as prescribed by PoCRA
3.29.	PMU/Authorized stakeholder	Create/Update	Training Literature	PMU should be able to publish relevant training literature on the portal which would be accessible by all farmers and authorized stakeholders
3.30.	Trainee	Receive	Feedback Form	Application should send a feedback form/ link to all trainees who have attended the training, post the training to record a feedback on various parameters like training content, trainer feedback, infrastructure support, etc.
3.31.	Trainer	Receive	Feedback Form	Application should send a feedback form/link to trainer/s post training to record a feedback on various parameters like training support, training infrastructure support, etc.
3.32.	PMU	View	Dashboards & Reports	PMU should be able to view training dashboards and reports giving view of trainings conducted, average feedback, etc. as prescribed by PoCRA. It should get a category-wise view (based on location, produce etc.) of farmers such that they can nominate the farmers for specific training

## II. Farmer Field School:

Through this application, PD ATMA would be able to upload the schedule of Farmer Field Schools on which a FFS calendar would be prepared. Host Farmers would be identified with the help of Krushi Mitra, on whose farm the demonstration would be conducted. The application would capture the information of the farmers who would be able to nominate themselves for a FFS based on their interest/need and post requisition for a particular FFS. FFS would be one of the most powerful way of equipping the farmer with climate smart agronomic practices. A feedback would be recorded by both trainer and trainees post the FFS.

Sr. No.	User	Action	Object	Functional Description
3.33.	PD ATMA/Authorized stakeholder	Upload	FFS Schedule	PD ATMA/ Authorized Stakeholder should be able to upload the FFS Calendar and Schedule on the PoCRA digital platform
3.34.	PMU/Application	Create/Update	FFS Calendar	PMU/ Application should be able to publish the FFS Schedule on the PoCRA portal/Mobile Application which can be viewed by Farmers/ Authorized Stakeholders
3.35.	Farmer/Authorized Stakeholders	Receive	Alerts & Reminders	Application should be able to send alerts and reminders to farmers & authorized stakeholders about upcoming FFS
3.36.	PMU/Application	Forward	FFS Calendar	Application/PMU should send a monthly FFS calendar to farmers/ authorized stakeholders along with details like location, date, etc.
3.37.	Farmer/Authorized Stakeholders	Submit	FFS Requests	Farmers should be able submit FFS requests on the PoCRA digital platform
3.38.	Krushi Mitra/Authorized stakeholder	Update	Host Farmer Information	Krushi Mitra/ Authorized Stakeholder should be able to update host farmer details for a particular FFS on the PoCRA digital platform
3.39.	Host Farmer	Update	Participation	Application should be able to take a confirmation from the Host farmer via SMS/Biometric or any other channel as prescribed by PoCRA
3.40.	Krushi Mitra/Authorized stakeholder	Update	Geo-tag Location	Krushi Mitra/ Authorized Stakeholder should be able to geo-tag the location of host farm on the PoCRA digital platform

Sr. No.	User	Action	Object	Functional Description
3.41.	Farmer/Authorized Stakeholders	Submit	FFS Nomination	Farmer should be able to nominate himself/herself for a FFS
3.42.	Krushi Mitra/Authorized stakeholder	Submit	FFS Nomination	Krushi Mitra/ Authorized stakeholder should be able to nominate farmers for a FFS
3.43.	PoCRA digital platform	Authenticate	FFS Nomination	In case of third party training nominations, application should be able to authenticate the nomination via SMS or any other channel
3.44.	Farmer/Authorized Stakeholders	Receive	Nomination Acknowledgment	Farmer should get an acknowledgment for his/her nomination
3.45.	KVK/ Authorized Stakeholder	Update	Trainer/ Scientist Details	KVK/ Authorized stakeholder should be able to update Trainer/ Scientist details on the PoCRA digital platform
3.46.	Trainer	Receive	Acknowledgment	Trainer should get an acknowledgment from the application for the FFS he/she has to conduct
3.47.	PMU/Authorized stakeholder	Upload	Trainee List	PMU/ Authorized Stakeholder should be able to upload a final trainees list on the PoCRA digital platform for the FFS
3.48.	PoCRA PMU/Application	Forward	Training Confirmation	Application/PMU should be able to send a confirmation to all trainees along with details like date, geo-tagged venue, etc.
3.49.	Trainer	Receive	Training Confirmation	Application/PMU should be able to send a confirmation to the trainer along with details such as date, geo-tagged venue, etc.
3.50.	Farmer and Trainer	Receive	Alerts & Reminders	Application should be able to send alerts and reminders to farmers & trainer about upcoming FFS
3.51.	Trainer	Receive	Trainee List	Application/PMU should be able to send the confirmed trainee list to the Trainer/ KVK
3.52.	Trainer	Upload	Attendance List	Trainer/ KVK should be able to upload the signed and stamped attendance list on the PoCRA digital platform
3.53.	KVK/Trainer	Upload	Photographs & Videos	Trainer/ KVK should be able to upload Photographs and Videos on the PoCRA digital platform of the FFS
3.54.	KVK/Trainer	Upload	Literature & Documents	Trainer/ KVK should be able to upload literature and documents related to the FFS on the PoCRA digital platform which can be accessed by farmers/ authorized stakeholders

Sr. No.	User	Action	Object	Functional Description
3.55.	Trainee	Receive	Literature & Documents	Application/ PMU should send the literature/documents to all the trainees of the FFS
3.56.	KVK/Trainer	Upload	Advisory	Trainer/ KVK should be able to update Advisory related to the FFS which would be sent to all farmers via App/SMS/Email and any other channel as prescribed by PoCRA
3.57.	Farmer/Authorized Stakeholders	View	Dashboard	Farmer should get a dashboard view of his/her FFS history, upcoming FFS and associated documents and other details as prescribed by PoCRA
3.58.	Trainee	Submit	FFS Feedback	Application should send a feedback form/link to all trainees post FFS to record a feedback on various parameters like FFS content, trainer feedback, infrastructure support, etc.
3.59.	Trainer	Submit	FFS Feedback	Application should send a feedback form/link to Trainer/ KVK post FFS to record a feedback on various parameters like FFS support, FFS infrastructure support, etc.
3.60.	PMU	View	Dashboard	PMU should be able to view FFS dashboards and reports giving view of FFS conducted, average feedback, etc. as prescribed by PoCRA. The dashboard should also give a view of all the schemes availed by the beneficiaries under PoCRA, which would allow for better and personalized training modules.
3.61.	Farmer/Authorized Stakeholders	Post	Digital Content	Farmer should be able to post his/her innovative techniques/products used on the portal which can be viewed by other farmers/PoCRA functionaries
3.62.	PoCRA digital platform	Update	Knowledge recognition	Application should have a knowledge recognition program to recognise innovative techniques posted by farmers and ensure it reaches other farmers
3.63.	KVK/Trainer	Post	Digital Content	KVK/Knowledge Partner should be able to post innovative techniques and products which can be viewed by other farmers/PoCRA functionaries
3.64.	PoCRA digital platform	Update	Knowledge recognition	Application should have a knowledge recognition program to recognise innovative techniques posted by KVK/Knowledge Partners and ensure it reaches farmers

### III. -Learning and Best Practices:

A Centre of Excellence (CoE) would be created on the portal which would be accessed by farmers and authorized stakeholders. State Agriculture Universities, Public Organizations, Knowledge partners and PoCRA authorized stakeholders would be able to upload documents, videos, demos and e-learning modules on the CoE which would be categorized in the repository.

Sr. No.	User	Action	Object	Functional Description
3.65.	Farmer/Authorized Stakeholders	View	COE	Farmers/ Authorized Stakeholder should be able access COE on the PoCRA digital platform which would consist of e-learning modules, literature, demos, research, documents, articles and other material
3.66.	KVK/Knowledge Partner/SAU/Public Organizations	Upload	E-learning Modules	KVK/ Knowledge Partners/ State Agriculture Universities/ Public Organizations should be able to upload e-learning module on a repository on the PoCRA digital platform
3.67.	Farmer/Authorized Stakeholders	View	E-learning	Farmers/ Authorized Stakeholder should be able to access the e-learning training modules
3.68.	Farmer/Authorized Stakeholders	Submit	Feedback	Farmer should be able to give a feedback for the e-learning training on the PoCRA digital platform on parameters like training content, relevance, etc.
3.69.	Farmer/Authorized Stakeholders	View	E-learning	Farmers should be able to search and filter for e-learning modules on the PoCRA digital platform
3.70.	Call Centre Agent	Send	E-learning	Call centre agent should be able to send e-learning link to farmer when he/she requests via call/App/SMS or any other channel
3.71.	Farmer/Authorized Stakeholders	Submit	Training Request	Farmer should be able to request for a particular e-learning module by calling the call centre or any other channel as prescribed by PoCRA
3.72.	Farmer/Authorized Stakeholders	View	Dashboard	Farmer should be able to view a dashboard view of all trainings done by him/her along with other details
3.73.	PMU	View	Dashboard	PMU should be able to view a dashboard and report of the no. of farmers taking a



Sr. No.	User	Action	Object	Functional Description
				particular training along with average feedback and other parameters
3.74.	Farmer/Authorized Stakeholders	Receive	Trainings	PMU/ Authorized stakeholders should be able to send important e-learning modules to farmers
3.75.	KVK/Knowledge Partner/SAU/Public Organizations	Upload	Literature & Documents	KVK/ Knowledge Partners/ State Agriculture Universities/ Public Organizations should be able to upload literature, research documents, DIY, demos and other informative material on the PoCRA digital platform
3.76.	KVK/Knowledge Partner/SAU/Public Organizations	Upload	Literature & Documents	KVK/ Knowledge Partners/ State Agriculture Universities/ Public Organizations should be able update meta data while uploading literature to create a repository
3.77.	Application	Delete	Content	PoCRA digital platform should be able to perform auto-expiry of content (Moderated Public Platform) in a given stipulated time as defined by PoCRA PMU.
3.78.	Farmer/Authorized Stakeholders	Receive	Literature & Documents	KVK/ PMU should be able to send emails to farmer with links of important literature to disseminate important information
3.79.	PMU/Application/Authorized Stakeholder	Forward	Literature & Trainings	PMU/ Application/ Authorized stakeholder should be able to publish most read or most popular literature/trainings to all farmers/ stakeholders
3.80.	KVK/Knowledge Partner/SAU/Public Organizations	Upload	Best Practices	KVK/ Knowledge Partners/ State Agriculture Universities/ Public Organizations should be able to upload best practices related to climate change, soil, water management and agriculture products on the PoCRA digital platform which would be accessed by other farmers/ authorized stakeholders
3.81.	Farmer/Authorized Stakeholders	Receive	Best Practices	Application/ PMU/ Authorized stakeholder should be able to disseminate best practices to farmers via App/SMS/Email and other channels as prescribed by PoCRA

## 4 Weather Advisory and Warning application

### 4.1 Overview

Agriculture and in turn farmers are worst affected by climate change and uncertainties of weather including rising temperature, intra- seasonal and inter- annual variability. It exacerbates produce losses, reduces production and successively results in decrease in farm income. Farmers, especially small holders, suffer the most as they are ill-prepared to cope with climate-induced disasters. To minimize adverse impact of climate change on agriculture, providing farmers with reliable agro-meteorological information, alerts and advices especially related to rainfall and its forecast, is need of the hour.

This application would be able to provide all the stakeholders with customized and real-time weather information alongwith warnings & alerts. The weather advisory application, includes collecting, processing, managing agro-meteorological data and issuing agro advisories using the digital platform and farmers' feedback, and enhancing local capacity for community-level surveillance. This will assist in making informed farm management decisions subsequently leading to reducing losses, increasing production and enhancing profits. Besides, it would prove to be foremost climate change adaptation strategy.

The application would be available for all stakeholders.

### 4.2 Indicator

The following table depicts indicators used to measure the performance and efficacy of the acitivity, information and services provide by this application. A detailed understanding and narration of indicators alongwith component and sub-component wise indicator mapping can be found in annexure 11.1 and 11.2

Indicator type	Name of Indicator	Unit of measure	Frequency	Source
Project Development Objectives (PDO) indicators	Farmers reached with agricultural assets or services	Number	Semi-annual	PoCRA MIS
Intermediate indicators	-	-	-	-

### 4.3 Features

**Weather advisory and warning application** would have the following features and functions

Inputs to PoCRA digital platform	Analysis by PoCRA digital platform	Outputs provided by PoCRA digital platform
PoCRA digital platform would fetch <b>data including forecasts</b> from various public sector platforms <ul style="list-style-type: none"> <li>▶ Satellite imagery, Maharain</li> <li>▶ IMD</li> <li>▶ Mahavedh</li> </ul>	PoCRA digital platform would analyse data and present it in an interpretable form which would be creatively presented using features such as maps, illustrations, icons and images	<ul style="list-style-type: none"> <li>▶ Farmers would be able to view weather advisory customized to their farms</li> <li>▶ Farmers would be able to raise geo-tagged distress signal in case of weather emergencies and inform the authorities of the distress through alert buttons</li> <li>▶ Farmers would be able to receive advice, notifications and alerts to tackle weather related emergencies</li> <li>▶ All stakeholders would be able to view weather data through a mobile/ web application</li> <li>▶ All stakeholders would be able to view weather data, filter and search as per the geographic location and data source</li> <li>▶ All stakeholders would be able to view the weather data on maps which would be creatively presented using features such as illustrations, icons and images</li> </ul>
PoCRA digital platform would fetch <b>notifications including forecasts</b> and alerts from various public sector platforms	PoCRA digital platform would analyse notifications and would be able to present it in an interpretable form	<ul style="list-style-type: none"> <li>▶ All stakeholders would be able to view weather notifications through a mobile/ web application</li> <li>▶ All stakeholders would be able to view weather notifications and filter it to a geographic location and data source</li> <li>▶ All stakeholders would be able to view the weather data on maps which would be creatively presented using features such as illustrations, icons and images</li> </ul>
AA/ CA would be able to input <b>local weather status</b>	PoCRA digital platform would be able to verify inputs with weather data	<ul style="list-style-type: none"> <li>▶ PoCRA digital platform would be able to self-learn from deviations between local weather status input by CA, AA &amp; farmers and weather notifications issued, in order to reduce errors.</li> </ul>
Farmer would be able to input <b>local weather status</b>	PoCRA digital platform would be able to verify inputs with weather data	<ul style="list-style-type: none"> <li>▶ Moderate public forum like feature would be viewable to all stakeholders</li> </ul>

### 4.4 Functional Requirement Specifications (FRS)

Sr. No	User	Action	Object	Functional Description
<b>Weather advisory and warning</b>				
4.1.	PoCRA digital platform	Pull	Farmer Data	PoCRA digital platform should be able to pull farmer data from the following but not limited to socio-economic census data, crop loan and crop loan waiver data, mahabhulekh data and all databases available offline with the Ministry of Agriculture, Maharashtra
4.2.	PoCRA digital platform	Pull	Watersheds and watershed development data	PoCRA digital platform should be able to capture data about watersheds and watershed development from public sector platforms such as MRSAC, Integrated Watershed Management Programme - Vasundhara Panlot Vikas, Farm ponds on demand and Jalyukt Shivar Abhiyaan
4.3.	PoCRA digital platform	Pull	Weather data including forecasts	PoCRA digital platform should be able to pull past, present and forecast weather data including forecasts from public sector platform such as Satellite imagery, Maharain, IMD and Mahavedh on the parameters such as - Rainfall - Relative Humidity - Wind speed - Wind direction - Temperature
4.4.	PoCRA digital platform	Analyse and update	Weather data	PoCRA digital platform should be able to run algorithms to analyse weather data including forecasts and historical data from public sector platform such as Maharain, IMD and Mahavedh and provide filtered, relevant and an illustrative, creatively rich and interpretable view to the user about weather, weather advisory and forecasts
4.5.	Relevant Stakeholder	View	Weather data including forecasts	All stakeholders should be able to view, on his/ her mobile and/ or web application, interpretable weather data and advisory including forecasts on mobile and web applications. Users should be able to filter, compare and search information as per the geography on a dynamic and intuitive graph
4.6.	Relevant Stakeholder	View	Weather data including forecasts on web and mobile applications	All stakeholders should be able to view geographically relevant weather data and advisory, on his/ her mobile and/ or web application, including forecasts through PoCRA web and mobile application on a map view creatively presented using features such as illustrations, icons and images. Users should be able to filter, compare and search information as

Sr. No	User	Action	Object	Functional Description
				per the geography on a dynamic and intuitive graph
4.7.	PoCRA digital platform	Pull	Weather advisory, notifications, warning and alerts from various source	PoCRA digital platform should be able to pull weather advisory, notifications, warning and alerts from public sector platforms such as Maharain, IMD, Mahavedh and satellite imagery on the parameters such as -Rainfall -Satellite imagery - Relative Humidity - Wind speed - Wind direction - Temperature - Evapotranspiration
4.8.	Relevant Stakeholder	View	Weather advisory, notifications, warning and alerts belonging to various sources	All stakeholders should be able to view geographically relevant weather advisory, notifications, warning and alerts through SMS and PoCRA web and mobile application notifications. Users should be able to filter and search data as per the geography.
4.9.	Relevant Stakeholder	View	Weather warning, alerts and notifications through SMS	All stakeholders should be able to view geographically relevant weather advisory, notifications, warning and alerts through SMS in the format as prescribed by PoCRA PMU, frequency as defined by PoCRA PMU and warning/ urgent alert frequency as defined by PoCRA PMU
4.10.	Relevant Stakeholder	View	Weather notifications, warning and alerts on web and mobile applications	All stakeholders should be able to view geographically relevant weather advisory, notifications, warning and alerts through PoCRA web and mobile application on a map view creatively presented using features such as illustrations, icons and images
4.11.	AA/CA	Input	Local weather status	AA/ CA should be able to input real-time weather information in the PoCRA digital platform for the block, cluster and a village
4.12.	PoCRA digital platform	Verify	Local weather status as input by AA/ CA	PoCRA digital platform should be able to verify local weather status input by CA/ AA against the weather notifications, alerts and warnings the PoCRA digital platform has issued. PoCRA digital platform should be able to record the deviations between the local weather status and weather notifications it has issued basis the data from various sources.

Sr. No	User	Action	Object	Functional Description
4.13.	PoCRA digital platform	Analyse	From deviations and errors	PoCRA digital platform should be able to self-learn from deviations between local weather status input by CA/AA and farmers and weather notifications it has issued. Basis this learning, the PoCRA digital platform should be able to reduce errors in issuing weather notifications, alerts and warning.
4.14.	Farmer/Beneficiary	Input	Local weather status	Farmers should be able to input real-time weather information in the PoCRA digital platform for his farm
4.15.	Relevant Stakeholder	View	Local weather status on a map view	All stakeholders should be able to view local weather status, on his/ her mobile and/ or web application, as input by peer farmers. The inputs should be viewed on maps creatively presented using features such as illustrations, icons and images.
4.16.	Farmer/Beneficiary	View	Customised weather notifications, alerts and warnings	Basis the data and notifications captures by the PoCRA digital platform, the PoCRA digital platform should be able to run algorithms and analyse the data and provide a weather view to the farmer on his/ her mobile and/ or web application customised to his farm/.farms
4.17.	Farmer/Beneficiary	View	Customised weather notifications, alerts and warnings through a SMS	Basis the data and notifications captures by the PoCRA digital platform, the PoCRA digital platform should be able to run algorithms and analyse the data and provide a weather notifications, warnings and alerts through SMS, customised to his/ her farm
4.18.	Farmer/Beneficiary	Raise	Distress signal	Farmers should be able to raise a geo-tagged distress signal in case of weather emergencies and inform the authorities of the distress – Alert button
4.19.	DoA/GoM officials	Post	Advice on distress signal	Relevant authorities of Government of Maharashtra and department of agriculture should be able to respond to distress signal, issue advice and convey messages.
4.20.	Farmer/Beneficiary	Receive	Weather distress management advisory	Farmers should be able to receive weather distress management advisory

## 5 Farmer Engagement and Feedback Application

### 5.1 Overview

This Application comprises functionalities that would support a proactive and reform-minded government primarily because it places importance in the experience of the Farmer. This application aims to understand the performance and impact of service reforms on the beneficiaries of the project. In order to obtain real time data, the application would be accessed in every step of implementation of services. This approach has the potential to measure the project on parameters such as scheme's impact, ease of availing, advisory and support, experience with stakeholders in open market procurement including the digital platform etc. In many cases, two-way interaction would be plugged in so as to strengthen the support services that beneficiaries and functionaries would benefit out of, and that the project would learn and improvise on the experience.

The FRs for this application have been categorised into three broad functionalities – (i) Feedback (ii) Enquiry and Support and (iii) Grievance. These differ in the kind of users, channels, nature of data and analysis and have been designed keeping in mind the nature of functionalities that would be incorporated.

The nature of the data that would be captured would range from qualitative to quantitative like ratings, Likert scale, geo-tagged photographs etc. In order to make sure that real time data is captured, different channels would be employed catering to different users keeping in mind their level of literacy, digital dexterity, technical and agricultural knowledge.

The users of this application would include Farmer, Call-centre agents, PoCRA functionaries, KVK Scientist, Knowledge partners. The objectives of some of these users, with respect to this application have been detailed out below.

**Farmer:** From the perspective of the farmer, this platform would enable him/her to raise concerns, seek help and provide feedback for improvisation of PoCRA services. From the aspect of convenience, user-friendliness, resolution and support, the user adoption and retention into the technical platform would be a defining success factor. Hence, this is important not only for the farmers but also the Project Authorities to introduce changes in the application based on the farmer's experiences. A dashboard view consolidating feedbacks and grievances would be provided to the PMU in order to enable an information-led decision making process.

**Call-Center:** The call center agent would provide support to the farmer on the technical aspects of the project, advisory, grievances, redressals and the digital platform. They would play a very important role in assisting the farmer on utilizing the potential of the tech platform.

**PoCRA Functionaries:** In the context of this application, the functionaries would be able to support the farmers in terms of addressing grievances and support requisition. They would be able to rate and give feedback to the vendors who would provide implementation services to the farmers in goods and works procurement. This is vital as their technical expertise would enable capturing quality feedback and better decision making.

This application aims to support the PDOs of the project by ensuring a means to measure the effectiveness of the services extended to farmers and other stakeholders. The feedback from beneficiaries will help to improve the quality of services and advisory. The success of the project

would largely be affected by measuring the quality and impact of the services and advisory and ensuring the feedback is incorporated in further services. The stakeholders could be trained basis the feedback provided by farmers who interact with them.

## 5.2 Indicators

The following table depicts indicators used to measure the performance and efficacy of the activity, information and services provide by this application. A detailed understanding and narration of indicators alongwith component and sub-component wise indicator mapping can be found in annexure 11.1 and 11.2.

Indicator type	Name of Indicator	Unit of measure	Frequency	Source
Project Development Objectives (PDO) indicators	Climate resilient agriculture: Increase in water productivity at farm level	Percentage	Annual (After 3 year)	POCRA MIS
	Climate resilient agriculture: Improved yield uniformity and stability	Percentage	Spatial variability is measured at mid-term and at the end of the project implementation	POCRA MIS
	Net greenhouse gas emissions	Tonnes/year	End of the project	EX ACT model
	Farm income (ratio of farm income for women-headed HH with/without PoCRA)	Number	At mid-term and end-of-project implementation.	POCRA MIS
	Farmers reached with agricultural assets or services	Number	Semi-annual	POCRA MIS
<b>Intermediate indicators</b>	-	-	-	-

## 5.3 Features

Some of the common attributes that run through the application have been listed below:

- ▶ The application would have varied functionalities including alert/reminder mechanisms, exceptions & escalations, geo-tagging, ticketing-service, ratings, analysis and learning algorithms including knowledge and skills recognition.
- ▶ The application would focus on two-way interaction among users like Farmers, Call-centre agents, PoCRA functionaries, Vendors, KVK Scientist, Knowledge partners, etc.
- ▶ The different channels employed in the application would include but not limited to web, mobile application, SMS, USSD, IVR, web surveys, Call centre, physical documents and Idea management software.
- ▶ Application would integrate with various central and state government grievance portals such as Aaple Sarkar (<https://aaplesarkar.maharashtra.gov.in/en/>)



## 5.4 Functional Requirement Specifications (FRS)

Some functionalities, which are common for the application have been listed below.

1. The application and all forms would be bi-lingual
2. In case of feedback, enquiry and grievance submitted via third party(on behalf of farmer), the application would authenticate the same via SMS or other channels
3. Application would follow the escalation and exceptions as per the logic prescribed by PoCRA
4. Application would provide ageing reports
5. Helpdesk/PoCRA digital platform should have provision to provide physical letters to farmers/authorized users wherever applicable/required

### I. Feedback:

The main objective of this application is to capture feedback and rating of service delivery of stakeholders including farmer's/beneficiaries, PoCRA functionaries and provide a consolidated view to the PMU to help in decision making post completion of any scheme. Farmers, field staff, external stakeholders and other general users would be able to provide feedback about PoCRA's services. The relevant PoCRA personnel in the hierarchy would be able to view feedbacks. Besides, the rating reports on service delivery would be reviewed by relevant PoCRA PMU members to take corrective action wherever required.

Sr. No.	User	Action	Object	Functional Description
5.1.	Farmer/ Authoriz ed Stakehol ders	Receive	Feedback Form	PoCRA digital platform should be able to send a feedback form (link in cases wherever applicable) to farmer through SMS/E-mail/App after completion of each scheme/service/support/goods/procurement/payment/training/FFS that the farmer has availed through the PoCRA digital platform
5.2.	Farmer/ Authoriz ed Stakehol ders	Submit	Feedback	Farmer should be able to give his/her feedback through Likert Scale/Ratings/Reviews or any other quantitative/qualitative channels as prescribed by PoCRA
5.3.	Farmer/ Authoriz ed Stakehol ders	Submit	Feedback	Farmer should be able to give his/her feedback/ratings through Mobile application/ Web/ E-mail/ Call/ SMS/ USSD/ IVR or any other channel prescribed by PoCRA
5.4.	Farmer/ Authoriz ed Stakehol ders	Submit	Feedback	Farmer/PoCRA functionaries should be able to capture geo-tagged information and upload photographs while submitting feedback

Sr. No.	User	Action	Object	Functional Description
5.5.	Farmer/ Authoriz ed Stakehol ders	Receive	Feedback Acknowl edg ement	Farmer should be able to receive acknowledgement alerts for the feedback provided by him/her via SMS/E-mail
5.6.	PoCRA digital platform	Pull	State & Central Feedback & Grievance Management	Application should be able to extract state and central feedback and grievance management applications like Aaple Sarkar using APIs
5.7.	Farmer/ Authoriz ed Stakehol ders	View	Ratings and Reviews	Farmer should be able to view ratings and reviews of schemes/goods/vendors when he/she is searching/applying for schemes/goods/vendors
5.8.	Farmer/ Authoriz ed Stakehol ders	Receive	Alerts & Reminders	Application should be able to send reminders to the farmers if they have not provided any feedback after a certain number of days (as per PoCRA logic) of availing any scheme/service/support/goods/procurement/payment/training/FFS
5.9.	Call Centre Agent	View	Feedback Dashboard	Call Centre agents should be able to receive alerts and information of those farmers who have not given a feedback or a dashboard view of missing feedback which is critical
5.10.	Call Centre Agent	Submit	Feedback	Call Centre agent should be able to collect missing feedback from farmers and fill it on their behalf
5.11.	Farmer/P oCRA functiona ries	Submit	Schemes/Ser vices Feedback	Farmer/PoCRA functionaries should be able to submit a feedback post completion of services/schemes/works availed by him/her
5.12.	Farmer/P oCRA functiona ries	Submit	Goods Feedback	Farmer/ PoCRA Functionaries should be able to submit a feedback on goods procured (schemes/private)
5.13.	PoCRA digital platform	Create/U pdate	Goods Master List	Application should be able to create and update a master list of goods procured by farmers to ensure feedback of each good can be recorded and is available to farmers. This master list can be populated as per the procurement invoices submitted by the beneficiaries.
5.14.	Farmer/P oCRA functiona ries/OE M	Submit	Vendors Feedback	Farmer/ PoCRA Functionaries should be able to submit a feedback on all vendors who implemented the schemes (goods/works/services). The vendor name should be auto populated in the feedback form based on the information in the PoCRA digital platform

Sr. No.	User	Action	Object	Functional Description
5.15.	PoCRA digital platform	Create/Update	Vendors Master List	Application should be able to create and update a master list of vendors to ensure feedback of each vendor can be recorded respectively
5.16.	Farmer/ Authorized Stakeholders	Submit	PoCRA Functionaries Feedback	Farmers should be able to give a feedback to PoCRA functionaries (AA/CA/VCRMC/Others) on knowledge/support extended by them
5.17.	Farmer/ Authorized Stakeholders	Submit	Call Centre Feedback	Farmer should be submit a feedback on the call centre and the agent like call quality, agent support, technical knowledge, communication, etc.
5.18.	Farmer/ Authorized Stakeholders	Submit	ICT Feedback	Farmer should be able to give a feedback on the digital platform based on his/her experience through all channels such as call-centre, web, app, surveys etc.
5.19.	Farmer/ Authorized Stakeholders	Submit	Training/FFS Feedback	Farmer/ PoCRA Functionaries should be able to submit a feedback on the training/FFS attended by him/her like relevance of training, infrastructure support for training, etc.
5.20.	Farmer/ Authorized Stakeholders	Submit	Trainer/KVK Feedback	Farmer/ PoCRA Functionaries should be able to submit a feedback to the trainer/KVK Scientist of the training attended by him/her
5.21.	PoCRA digital platform	Create/Update	Trainer Recognition	Application should have a trainer recognition program based on the analytics on the feedback/ratings provided by the trainees
5.22.	Farmer/ Authorized Stakeholders	Submit	Feedback	Farmer should be able to rate the advisory provided by PoCRA
5.23.	PoCRA functionaries	Create/Update	Feedback Forms/ Menus/ Surveys	PoCRA functionaries should be able to create and update feedback forms/menus/surveys as per the prescriptions of PoCRA PMU. In case of survey forms, these can be created by PMU and be pushed to farmers.
5.24.	PoCRA functionaries	View	Feedback Dashboard	PoCRA functionaries should be able to get a dashboard view of ratings and reviews of schemes/goods/vendors/trainers

Sr. No.	User	Action	Object	Functional Description
5.25.	PoCRA digital platform	Analyse and update	Feedback	Application should be able to analyse the feedback received where feedbacks falling under the 'critical' category should be escalated and alert mechanism should be enabled as per the logic prescribed by PoCRA
5.26.	PoCRA digital platform	Create/Update	Feedback Dashboard	Application should have dashboards to analyse the feedback and rating of various schemes/goods/vendors/trainings/FFS
5.27.	PoCRA digital platform	Analyse and update	Feedback	Application should have analytical capabilities to analyse feedback provided by multiple stakeholders which should be visualised district wise/cluster wise/month wise/domain wise
5.28.	PoCRA digital platform	Analyse and update	Feedback	Application should raise alerts based on analytical capabilities to identify vendors/products/services/trainers rated critically low/high and subsequent application provisions based on this information to be provided by PoCRA PMU
5.29.	PoCRA digital platform	Analyse and update	Feedback	Application should have algorithms to analyse and learn from the feedback given by farmers/PoCRA functionaries on various schemes/services/support/goods/procurement/payment/training/FFS and make application provisions as prescribed by PoCRA PMU for e.g. a combination of qualitative feedback, Likert Scale and Yes/No questions would be able to highlight faulty goods, defaulting vendors, functionaries providing no support, etc.
5.30.	Farmer/Authorized Stakeholders	Update	Feedback	Application should send a reminder to Farmer to be able to update his/her feedback after a few weeks/months, as prescribed by POCRA to rate the sustainability of the structures or goods along with uploading photographs and geo-tag location

## II. Enquiry and Support:

This category includes all such cases where the farmer would seek advisory and support on various schemes, trainings such as FFS, vendor support on goods, services or maintenance support etc. Mechanisms for capturing the questions required by the farmer through the call-centre, factors of adoption/usage of app in order to seek support would also be incorporated. Knowledge and skill recognition for the trainers as well as the farmers would be incorporated to recognize and encourage trainers and farmers to share knowledge and innovative techniques.

Sr. No.	User	Action	Object	Functional Description
5.31.	Farmer/ Authoriz ed Stakehol ders	Submit	Enquiry/Sup port Question	Farmer should be able to submit enquiry and support questions through Mobile application/ Web/ Call/ SMS/ USSD/ IVR or any other channel prescribed by PoCRA
5.32.	PoCRA digital platform	Pull	State & Central Feedback & Grievance Management	Application should be able to extract state and central feedback and grievance management applications like Aaple Sarkar using APIs
5.33.	Farmer/ Authoriz ed Stakehol ders	Receive	Enquiry Acknowledg ment	Farmer should receive acknowledgement alerts for the enquiry submitted by him/her along with the ticket number
5.34.	Farmer/ Authoriz ed Stakehol ders	Receive	Enquiry Response	Farmer should receive the response of his/her enquiry on SMS/E-mail and other channels as prescribed by PoCRA
5.35.	Farmer/ Authoriz ed Stakehol ders	Receive	Response Alerts	Farmer should receive alerts on SMS/App when his/her enquiry/support questions are responded
5.36.	Farmer/ Authoriz ed Stakehol ders	View	Enquiry History	Farmer should be able to view a history of all enquiry/support questions raised by him/her along with the responses
5.37.	Farmer/ Authoriz ed Stakehol ders	View	Enquiry Tracking Application	Farmer/Authorized users should be able to access Enquiry Tracking Application where they can view the status and life cycle of the enquiry e.g. where is the enquiry pending, who is working on the enquiry etc.
5.38.	PoCRA digital platform	Maintain	Enquiry Resolution Management Application	Application should maintain an Enquiry resolution management application to maintain logs
5.39.	Farmer/ Authoriz ed	Upload	Photographs	Farmer should be able to upload photographs and geo-tag locations when submitting an enquiry or support request

Sr. No.	User	Action	Object	Functional Description
	Stakeholders			
5.40.	PoCRA	Assign	Enquiry Stakeholder	Application should be able to forward the enquiry or support questions to relevant stakeholders as per logic provided by PoCRA
5.41.	Relevant Stakeholder	Receive	Alerts & Notifications	Application should be able to send reminders and alerts to PoCRA functionaries/KVK/Knowledge Partner/ Knowledge Partner Scientist/Trainers/Vendors/Other authorized stakeholders for answering enquiry or support question posted by farmers in a stipulated time frame as prescribed by PoCRA
5.42.	Farmer/ Authorized Stakeholders	Submit	Enquiry/Support Question	Farmer should be able to submit enquiry or support request before, during or post completion of any scheme. The parameters will include but not limited to scheme's impact, ease of availing, advisory and support, open market procurement
5.43.	Farmer/ Authorized Stakeholders	Submit	Enquiry/Support Question	Farmer should be able to submit an enquiry or support questions related to Schemes he/she is interested which can be answered by PoCRA functionaries/KVK/Knowledge Partner/Other authorized stakeholders
5.44.	Farmer/ Authorized Stakeholders	Submit	Enquiry/Support	Farmer/ Authorized users should be able to live stream video call with helpdesk/KVK/knowledge partner to seek support
5.45.	Relevant Stakeholder	Upload	Digital Content	Farmers/AA/CA/VCRMC/Other stakeholders should be able to post digital content like videos or digital brochures on the Schemes which can be accessed by other farmers/trainers
5.46.	Stakeholders/Application	Open/Close	Enquiry	PoCRA functionaries/KVK/Knowledge Partner/Vendors/Trainer/Other authorized stakeholders should be able to open and close an enquiry or support request once it has been answered/addressed
5.47.	PoCRA digital platform	Forward	Escalation	Application should be able to escalate unanswered enquiry or support questions as per the escalation matrix prescribed by PoCRA PMU for PoCRA functionaries/KVK/Knowledge

Sr. No.	User	Action	Object	Functional Description
				Partner/Vendors/Trainer/Other authorized stakeholders
5.48.	PMU	View	Dashboards	PoCRA PMU and other functionaries should be able to view dashboards to analyse the enquiry parameters like average enquiries submitted, average time to response, heat mapping districts/schemes that submit maximum enquiries, etc.
5.49.	PoCRA digital platform	Analyse and update	Enquiry/Support	Application should have analytical capabilities to analyse the enquiry or support questions provided by multiple stakeholders which should be visualised district wise/cluster wise/month wise/domain wise
5.50.	Farmer/Authorized Stakeholders	Submit	Enquiry/Support Question	Farmer should be able to submit enquiry or support questions related to the vendors/services that he/she is interested in
5.51.	Farmer/Authorized Stakeholders	Submit	Questions to Moderated Public Forum	Farmer should be able to post questions on goods/vendors on a moderated public forum which can be answered by other farmers/ authorized users
5.52.	Farmer/Authorized Stakeholders	View	Moderated Public Forum	Farmers/Authorized Users should have access to a Moderated public forum where they can ask questions and answer questions asked by other farmers/ authorized users
5.53.	Helpdesk /Application	Create/Update	FAQ	Helpdesk/Application should compile a FAQ from the questions asked by Farmers and get answered from KVK/Knowledge Partners
5.54.	Helpdesk /Application	Create/Update	FAQ	Helpdesk/Application should disseminate the FAQ to Farmers/Authorized users and publish on the PoCRA portal regularly as per the timeline defined by PoCRA
5.55.	PMU	View	Dashboards	PoCRA PMU and other functionaries should be able to view dashboards to analyse the enquiries raised and handled
5.56.	Call Centre Agent	Submit	Enquiry/Support Question	Call Centre Agent should be able to submit enquiry/support questions on behalf of farmer

Sr. No.	User	Action	Object	Functional Description
5.57.	Call Centre Agent	Open/Close	Enquiry	Call-centre agents should be able to open and close an enquiry or support request once it has been answered/addressed by voice-calling the farmer who had posted this enquiry or support questions
5.58.	Call Centre Agent	View	Dashboards	Call-centre agents should be able to view dashboards to analyse the enquiry or support questions required by farmers
5.59.	Farmer/Authorized Stakeholders	Submit	Training/FFS Enquiry	Farmer should be able to submit enquiry or support questions related to training he/she attended or wishes to attend
5.60.	KVK/Trainer	Post	Digital Content	KVK/Knowledge Partners/ Trainers should be able to post digital content on the FFS which can be accessed by other farmers/KVK/Knowledge Partner

### III. Grievance:

This application has the functionality to capture user complaints which would be forwarded to relevant functionaries for resolution. Grievance Redressal Mechanism (GRM) within the PoCRA digital platform is a provision for external stakeholder to convey his/her grievance or complaint and receive resolution in return. GRM would be accessed by all external stakeholders (Farmers, FPO etc.) irrespective of whether they have availed a scheme in PoCRA or not. The link to GRM would be posted on prominent locations on the PoCRA digital platform and website to enable access by all stakeholders. The relevant PoCRA personnel in the hierarchy would be able to view grievances and respond to them. In case of inaction by the relevant personnel, the application would be able to escalate the case automatically and would ensure response to the complaint. Besides, the grievances would be reviewed by relevant PoCRA PMU members to take corrective action wherever required.

Sr. No.	User	Action	Object	Functional Description
5.61.	Farmer/Authorized Stakeholders	Receive	Grievance Form	Farmer should be able to receive a link to the grievance form (or form) after rejection for an applied scheme
5.62.	Farmer/Authorized Stakeholders	Submit	Grievance Form	Farmer should be able raise a grievance on schemes/services/support/goods/procurement/payment/training/FFS/Assessments/Functionaries or any other stakeholder/service as prescribed by PoCRA
5.63.	Farmer/Authorized	Submit	Grievance Form	Farmer should be able to raise a grievance through Mobile application/ Web/E-mail/ Call/ SMS/ USSD/



Sr. No.	User	Action	Object	Functional Description
	Stakeholders			IVR/ Aaple Sarkar or any other channel prescribed by PoCRA
5.64.	Farmer/Authorized Stakeholders	Submit	Grievance Form	Farmer/ Authorized users should be able to live stream video call with helpdesk/KVK/knowledge partner to seek resolution
5.65.	PoCRA digital platform	Pull	State & Central Feedback & Grievance Management	Application should be able to extract grievances logged on state and central feedback and grievance management applications like Aaple Sarkar using APIs
5.66.	Farmer/Authorized Stakeholders	Submit	Grievance	Farmer should be able to submit trigger and submit a grievance any time via multiple channels
5.67.	Farmer/Authorized Stakeholders	Receive	Acknowledgment	Farmer should receive acknowledgement alert for the grievance submitted by him/her along with the complaint/ticket number
5.68.	Helpdesk/ Application	Update	Grievance Category	Helpdesk/Application should be able to categorise the grievance as per logic provided by PoCRA
5.69.	Helpdesk/ Application	Update	Grievance Criticality Level	Helpdesk/Application should be able to assign a critical level to the grievance as per logic provided by PoCRA e.g. Level 1 for grievances to be resolved within 12 hours, Level 2 for grievances to be resolved within 24 hours
5.70.	Helpdesk/ Application	Assign	Resolution Stakeholder	Helpdesk/Application should be able to assign relevant stakeholder to resolve farmer grievance as per logic provided by PoCRA
5.71.	Farmer/Authorized Stakeholders	Receive	Grievance resolution	Farmer should be able to receive the resolution of his/her grievance on SMS/E-mail and other channels as prescribed by PoCRA
5.72.	Farmer/Authorized Stakeholders	Receive	Resolution Alerts	Farmer should receive alerts on SMS/App when his/her grievance is responded to

Sr. No.	User	Action	Object	Functional Description
5.73.	Farmer/Authorized Stakeholders	View	Grievance Tracking Application	Farmer/Authorized users should be able to access Grievance Tracking Application where they can view the status and life cycle of the grievance e.g. where is the grievance pending, who is working on the grievance, etc.
5.74.	PoCRA digital platform	Maintain	Complaint Resolution Management Application	Application should maintain a complaint resolution management application to maintain logs
5.75.	Farmer/Authorized Stakeholders	View	Grievance History	Farmer should be able to view a history of all grievances questions raised by him/her along with the resolutions
5.76.	Farmer/Authorized Stakeholders	Upload	Photographs	Farmer should be able to upload photographs and geo-tag locations when submitting a grievance
5.77.	Farmer/Stakeholder/Application	Open/Close	Grievance	Farmer/Authorized Stakeholder/Application should be able to open/re-open/close grievances
5.78.	PoCRA digital platform	Forward	Escalation	Application should be able to escalate grievances as per the escalation matrix prescribed by PoCRA PMU for PoCRA functionaries/KVK/Knowledge Partner/Vendors/Trainer/Other authorized stakeholders
5.79.	Call Centre Agent	Submit	Grievance	Call Centre Agent should be able to submit grievance on behalf of farmer
5.80.	PoCRA functionaries	View	Grievance Dashboard	PoCRA functionaries should be able to view MIS reports on grievance redressal
5.81.	Farmer/Authorized Stakeholders	Submit	Grievance	Farmers should be able to raise a grievance on PoCRA functionaries (AA/CA/VCRMC/Others) on knowledge/support extended by them
5.82.	Farmer/Authorized Stakeholders	Submit	ICT Grievance	Farmer should be able to raise a grievance on the digital platform based on his/her experience through all channels such as call-centre, web, app, surveys etc.
5.83.	Farmer/Authorized	Submit	Training/FFS grievance	Farmer/ PoCRA Functionaries should be able to raise a grievance on trainings/FFS

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Sr. No.	User	Action	Object	Functional Description
	Stakeholders			
5.84.	PoCRA digital platform	Analyse and update	Grievance Algorithm	Application should run algorithms to identify heat maps of grievances for.eg. Multiple grievances on one vendor, unresolved grievances by VCRMC
5.85.	PoCRA digital platform	Analyse and update	Grievance Algorithm	Application should raise alerts based on analytical capabilities to identify vendors/products/services/trainers with multiple grievances raised and subsequent application provisions based on this information to be provided by PoCRA PMU

## 6 Climate risk modelling application

### 6.1 Overview

Uncertainty is an important facet of agriculture sector. It is inherent in climate, yields, prices, government policies, global markets etc. and causes fluctuations in farm incomes. The frequency and severity of risks in agriculture, caused due to such uncertainties, particularly in last few decades has increased on account of climate variability and change<sup>12</sup>. The Intergovernmental Panel on Climate Change (IPCC)<sup>13</sup> in its report IPCC Assessment Report (AR5)<sup>14</sup>, estimates that in India, agricultural loss would amount to USD 7 billion in 2030 due to climate variability and change; besides, it will severely affect the income of 10 per cent of the population. Climate change is a threat to agricultural production and its impacts vary depending on regional focus and on the type of production system. To a farmer, climate change results in decline in production, increase in produce losses and in turn poor returns on investment.

The climate change adaptation responses typically include

- Short-term responses that farmers often choose basis the observed changes and local knowledge & experiences
- Long-term transformative responses that require strategic planning and include government interventions like watershed development

Currently, interventions like weather forecasting, weather advisory, crop advisory based on changes in weather, watershed development etc. along with climate mitigation initiatives including enhancing carbon sequestration are either unreliable, obsolete, expensive, confusing, limited to research universities, lack awareness and/ or have failed.

Climate risk modelling, through this digital application, is proposed to provide farmers with customized information and advice about climate smart farm operations including sowing, crop management, harvesting, post-harvest management etc. Importantly, it would simulate effects of uncertainties on farm production, especially climatic as well as the most suitable adaptation solutions. This application would help farmers to adjust farm management strategies, based on various parameters including weather forecasts, soil health, pest and disease infestation, cropping pattern of the geography and commodity prices. It would render farmers the ability to diversify crops and enable smart allocation of resources.

Resultantly, it would provide farmers with customized advice to take an informed decision, facilitate increase in yield, reduction in losses, imbibe principles of climate adaptation thereby making them better equipped and enhance profitability.

Stakeholders who would have access to this application include

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<sup>12</sup> Planning commission report 'Risk Management in Agriculture' (2012),

<sup>13</sup> The Intergovernmental Panel on Climate Change (IPCC) is a scientific and intergovernmental body under the auspices of the United Nations

<sup>14</sup> <https://www.ipcc.ch/report/ar5/syr/> (Accessed 14 March 2018)

- ▶ Farmers, Agriculture Assistants, Cluster Assistants, producer organizations, KVK & SAU scientists and VCRMC for customized crop advisory
- ▶ Farmers for crop modelling

## 6.2 Indicators

The following table depicts indicators used to measure the performance and efficacy of the activity, information and services provide by this application. A detailed understanding and narration of indicators alongwith component and sub-component wise indicator mapping can be found in annexure 11.1 and 11.2.

Indicator type	Unit of measure	Frequency
Project Development Objectives (PDO) indicators	✓ Farmers reached with agricultural assets or services (number of beneficiaries touched)	Semi-annual
<b>Intermediate indicators</b>	-	-

## 6.3 Features

**Climate risk based crop advisory would have the following features**

Inputs to PoCRA digital platform	Analysis by PoCRA digital platform and/ or KVK/ SAU	Outputs provided by PoCRA digital platform
<ul style="list-style-type: none"> <li>○ PoCRA digital platform would fetch <b>data and information regarding the following:</b> <ul style="list-style-type: none"> <li>▶ Weather data</li> <li>▶ Commodity prices and futures</li> <li>▶ Weather and climate</li> <li>▶ News on agriculture</li> <li>▶ Crop management</li> <li>▶ Soil health</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>○ PoCRA digital platform would analyse data and present in an interpretable form using features such as illustrations, icons and images</li> <li>○ SAUs and KVKs would be able to input advisory based on agriculture, animal husbandry, poultry and fishery</li> <li>○ SAUs and KVKs would be able to</li> </ul>	<ul style="list-style-type: none"> <li>○ The application would provide services to the Farmers. Following are the services that the application would provide to the farmers. <ul style="list-style-type: none"> <li>▶ <b>Dynamic crop advisory</b> based on the changing weather conditions, past &amp; forecasted climatic conditions, market prices, pest attack, crop stages etc. customized to farmers field</li> <li>▶ <b>Dynamic farm plan</b> outlining costs and profitability based on the changing weather conditions, past &amp; forecasted climatic conditions, market prices, pest attack, crop stages etc.</li> <li>▶ Consolidated view of data, information and knowledge relevant to the farmers</li> </ul> </li> </ul>

<ul style="list-style-type: none"> <li>▶ Pest and disease</li> <li>▶ Irrigation</li> <li>▶ Agriculture and allied information</li> </ul> <p>The sources would include MSAMB, NCDEX, news from publications, soil health card data, CropSAP, CropWatch, agriculture and water resources department.</p> <ul style="list-style-type: none"> <li>○ Inputs would be in Meta- Data format</li> <li>○ Inputs would be in the form of scanned data</li> <li>○ Input data from SAUs and KVKs would include <ul style="list-style-type: none"> <li>▶ Input based on Crop and crop management, biotic and abiotic stress detail, advocacy videos</li> </ul> </li> </ul>	<p>input leading practices</p> <ul style="list-style-type: none"> <li>○ PoCRA digital platform would have the capability of image processing (Not OCR)</li> <li>○ PoCRA digital platform would have the capability to consolidate, synthesize, analyse and present an interpreted data</li> <li>○ PoCRA digital platform would have the ability to self-learn and curtail errors</li> </ul>	<ul style="list-style-type: none"> <li>▶ Videos, illustration, audio and cartoons to help the farmers agriculture techniques</li> <li>▶ Ask queries on app and phone call</li> <li>▶ Video call and video streaming to enable near real-time advisory support through call center and application</li> </ul> <ul style="list-style-type: none"> <li>○ Relevant stakeholders would be able to view several parameters such as commodity prices, commodity futures, weather and climate, soil health, pest and disease, irrigation status, agriculture and allied data through a mobile/ web application</li> <li>○ Relevant stakeholders would be able to view data and information as mentioned above, filter, compare and search, present, historic and future data as per the geographic location and detail of each parameter</li> <li>○ Relevant stakeholders would be able to view colour coded maps to display information such as different types of soil, nutrients, nutrient deficiency and excess, organic carbon and various other soil testing parameters</li> <li>○ Relevant stakeholders would be able to view pest and disease attacks in colour coded maps to display features such as pest, disease, its types, incidences and advice on their management</li> <li>○ All stakeholders would be able to view the data on maps creatively presented using features such as illustrations, icons and images</li> <li>○ Farmers, AA and CA would be able to input real-time commodity prices in moderated public forum</li> <li>○ All stakeholders would be able to view crowd sourced commodity price data on a moderated public forum and on a map view</li> </ul>
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		<ul style="list-style-type: none"><li>○ Policy makers would be able to view cropping sentiments and analysis</li><li>○ Relevant stakeholders would be able to view crops sown, farmer-wise in colour coded maps to display features including but not limited crops grown, field crops, horticulture etc.</li><li>○ The resulting application would have crowd-sourced pest-attack tracking mechanism and the application would generate FAQs that could be viewed by the relevant stakeholders</li></ul>
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## 6.4 Functional Requirement Specifications (FRS)

Sr. No	User	Action	Object	Functional Description
6.1.	PoCRA digital platform	Pull	Weather data including forecasts	PoCRA digital platform should be able to pull past, present and forecast weather data including forecasts from public sector platform such as Satellite imagery, Maharain, IMD and Mahavedh on the parameters such as <ul style="list-style-type: none"> <li>- Rainfall</li> <li>- Relative Humidity</li> <li>- Wind speed</li> <li>- Wind direction</li> <li>- Temperature</li> </ul>
6.2.	PoCRA digital platform	Analyse and update	Weather data	PoCRA digital platform should be able to run algorithms to analyse weather data including forecasts and historical data from public sector platform such as Maharain, IMD and Mahavedh and provide filtered, relevant and an illustrative, creatively rich and interpretable view to the user about weather, weather advisory and forecasts
6.3.	PoCRA digital platform	Analyse	Weather data	PoCRA digital platform should be able to run algorithms to analyse weather data including forecasts and historical data from public sector platform such as Maharain, IMD and Mahavedh to calculate the optimal crop sowing period. The crop sowing period can be determined by calculating adequacy of rainfall and soil moisture to meet potential water requirements by a crop
6.4.	Relevant Stakeholder	View	Weather data including forecasts	All stakeholders should be able to view, on his/ her mobile and/ or web application, interpretable weather data and advisory including forecasts on mobile and web applications. Users should be able to filter, compare and search information as per the geography on a dynamic and intuitive graph
6.5.	Relevant Stakeholder	View	Weather data including forecasts on	All stakeholders should be able to view geographically relevant weather data and advisory, on his/ her mobile and/ or web



Sr. No	User	Action	Object	Functional Description
			web and mobile applications	application, including forecasts through PoCRA web and mobile application on a map view creatively presented using features such as illustrations, icons and images. Users should be able to filter, compare and search information as per the geography on a dynamic and intuitive graph
6.6.	PoCRA digital platform	Pull	Data about commodity prices	PoCRA digital platform should be able to pull commodity prices of past, present and commodity futures from databases such as MSAMB, NCDEX, MACP
6.7.	PoCRA digital platform	Analyse and update	Data about commodity prices	PoCRA digital platform should be able to analyse and update the commodity prices and futures data, ascertain its usability and importance and convert into smart graphics, illustrations and images
6.8.	Relevant Stakeholder	View	Data about commodity prices	All stakeholders should be able to view commodity prices and futures data, his/her mobile and/ or web application, creatively presented using features such as illustrations, icons and images. User stakeholders should be able to filter, compare and search information commodity-wise, market-wise and year-wise on a dynamic and intuitive graph
6.9.	PoCRA digital platform	Update	Data about commodity prices	PoCRA digital platform should be able to update the commodity prices of and commodity futures from databases such as MSAMB, NCDEX, MACP
6.10.	AA/CA/Farmers	Input	Commodity prices with provision of input anonymity	Farmers, AA and CA should be able to input, commodity prices as received by them market wise. The application should have ability for farmers to input commodity prices anonymously on a moderated public forum
6.11.	Relevant Stakeholder	View	Commodity prices	All stakeholders should be able to view the commodity prices input by the farmers, his/ her mobile and/ or web application, on a moderated public forum as well as on map view so that market-

Sr. No	User	Action	Object	Functional Description
				wise data is viewable and auto-updated on the map. User stakeholders should be able to filter, compare and search information commodity-wise, market-wise and year-wise on a dynamic and intuitive graph
6.12.	PoCRA digital platform	Pull	Data about soil health	PoCRA digital platform should be able to pull data related to the geography from public sector databases including central government and state government soil health card portals
6.13.	Application	Pull	NDVI data	Application should be able to pull NDVI data from relevant satellite image service providers including MRSAC
6.14.	PoCRA digital platform	Analyse and update	Data about soil health	PoCRA digital platform should be able to analyze soil health data, ascertain its usability and importance and convert into smart graphics, illustrations and images. The PoCRA digital platform should be able to link a data set with geographically relevant farmers
6.15.	Relevant stakeholders including Farmers, FPOs, VCRMC, PoCRA and department of agriculture staff	View	Data about soil health	Relevant stakeholders including Farmers, FPOs, VCRMC, PoCRA and department of agriculture staff should be able to view soil health, his/ her mobile and/ or web application, farmer-wise in colour coded maps to display features such as different types of soil, nutrients, nutrient deficiency and excess, organic carbon and various other soil testing parameters
6.16.	PoCRA digital platform	Update	Data about soil health	PoCRA digital platform should be able to update soil health data and maps at frequency as prescribed by the PoCRA PMU
6.17.	Farmer/Beneficiary	Input	Cropping sentiments	Farmers should be able to input their sentiments of crop/s that they would like to sow in the given season
6.18.	PoCRA digital platform	Analyse and update	Cropping sentiments	PoCRA digital platform should be able to analyse the data as input by farmers, regarding sentiments of crop to be sown.

Sr. No	User	Action	Object	Functional Description
				PoCRA digital platform should have algorithms to analyse this data and provide a creatively presented view, his/ her mobile and/ or web application, on maps to display cropping pattern sentiments
6.19.	Farmer and PoCRA PMU	View	Cropping sentiments	Farmers and PoCRA PMU should be able to view creatively presented cropping sentiment analysis his/ her mobile and/ or web application, in form of the following but not limited to smart graphics, illustrations and images.
6.20.	PoCRA digital platform	Pull	Data about crop sown	PoCRA digital platform should be able to pull data related to crop sown in the relevant geography from public sector databases including Cropwatch
6.21.	PoCRA digital platform	Analyse and update	Data about crop sown	PoCRA digital platform should be able to analyze data regarding crops grown, ascertain its usability and importance and convert into smart graphics, illustrations and images. The PoCRA digital platform should be able to link a data set of crops grown with geographically relevant farmers
6.22.	Relevant stakeholders including Farmers, FPOs, VCRMC, PoCRA and department of agriculture staff	View	Data about crop sown	Relevant stakeholders including individual Farmers, FPOs, VCRMC, PoCRA and department of agriculture staff should be able to view, his/ her mobile and/ or web application, crops sown farmer-wise in colour coded maps to display features including but not limited crops grown, field crops, horticulture etc.
6.23.	PoCRA digital platform	Update	Data about crop sown	PoCRA digital platform should be able to update crop sown data and maps at frequency as prescribed by the PoCRA PMU
6.24.	PoCRA digital platform	Pull	Data about pests and advisory	PoCRA digital platform should be able to pull data related to pests and advisory

Sr. No	User	Action	Object	Functional Description
				in the relevant geography from public sector databases including CropSAP
6.25.	PoCRA digital platform	Analyse and update	Data about pests and advisory	PoCRA digital platform should be able to analyze data regarding pest incidence along with relevant advisory, ascertain its usability and importance and convert into smart graphics, illustrations and images. The PoCRA digital platform should be able to link a data set of pest incidences with geographically relevant farmers
6.26.	Relevant stakeholders including Farmers, FPOs, VCRMC, PoCRA and department of agriculture staff	View	Data about crop pest	Relevant stakeholders including Farmers, FPOs, VCRMC, PoCRA and department of agriculture staff should be able to view, his/ her mobile and/ or web application, pest attacks in colour coded maps to display features such as pest, disease, its types, incidences and advice on their management
6.27.	SAU/KVK/ PoCRA PMU	View	Advisory related to pest attacks	Relevant stakeholders at SAUs and KVKs and/ or relevant personnel at PoCRA PMU should be able to view, on his/ her mobile and/ or web application, advisory notifications related to pests presented using features such as illustrations, icons and images. User stakeholders should be able to filter and search advisory topic wise, crop wise and geography wise.
6.28.	PoCRA digital platform	Update	Data about crop pest	PoCRA digital platform should be able to update pest incidence data and maps at frequency as prescribed by the PoCRA PMU
6.29.	Farmer/Beneficiary	Input	Pest attacks	Farmers should be able to input real-time pest attack including type of pest and/or disease, intensity, crop loss. The farmer should be able to upload images and geo-tag data - Pest attack tracking

Sr. No	User	Action	Object	Functional Description
6.30.	PoCRA digital platform	Pull	Data about irrigation status of the state	PoCRA digital platform should have ability to create form to capture data from the following ministries and departments such as irrigation, water conservation and as prescribed by the PoCRA PMU.
6.31.	PoCRA digital platform	Analyse and update	Data about irrigation status of the state	PoCRA digital platform should be able to analyze data regarding irrigation status of the relevant geography, ascertain its usability and importance and convert into smart graphics, illustrations and images. The PoCRA digital platform should be able to link a data set of irrigation with geographically relevant farmers
6.32.	Relevant stakeholders including Farmers, FPOs, VCRM, PoCRA and department of agriculture staff	View	Data about irrigation status of the state	Relevant stakeholders including Farmers, FPOs, VCRM, PoCRA and department of agriculture staff should be able to view, on his/ her mobile and/ or web application, irrigation status in colour coded maps
6.33.	PoCRA digital platform	Update	Data about irrigation status of the state	PoCRA digital platform should be able to update irrigation status and maps at frequency as prescribed by the PoCRA PMU
6.34.	PoCRA digital platform	Create/Update	Capture Data	PoCRA digital platform should have ability to create form to capture data from the following ministries and departments such as Agriculture, input and quality control, extension and training, land resources, planning, water conservation, revenue and as prescribed by the PoCRA PMU
6.35.	PoCRA digital platform	Create/Update	Capture Data	PoCRA digital platform should be have ability for data entry and access to other databases

Sr. No	User	Action	Object	Functional Description
6.36.	SAU/KVK authorised personnel	Input	Information regarding crop management	<p>Authorised personnel in public sector institutes such as SAUs and KVKs should be able to input crop management related information using media such as text, audio, visual, graphics, video, illustrations and cartoons. Information regarding the following but not limited to it:</p> <ul style="list-style-type: none"> <li>- Crop wise and geography wise cropping calendar</li> <li>- Crop wise and geography wise crop management such as seed, fertilizer application, pesticide application, irrigation management, crop care, mechanisation, equipment, harvesting, post-harvest handling, processing and storage</li> </ul>
6.37.	PoCRA digital platform	Pull	Information from SREP	PoCRA digital platform should be able to pull information from SREP and run algorithms to analyse it
6.38.	SAU/KVK authorised personnel	Input	Information regarding bank of agriculture leading practices relevant to the region	<p>Authorised personnel in public sector institutes such as SAUs and KVKs should be able to input universe of agriculture leading practices relevant to the region such as crop management, protected cultivation, horticulture, various relevant streams of agriculture such as animal husbandry, poultry, poultry and fishery</p>
6.39.	Relevant Stakeholder	Input	Farm, Village and Cluster level Information	<p>Stakeholders including AA, CA, KVK scientists, SAU scientists, AO, TAO, DAO, SDAO and DSAO should be able to input real-time, geo-tagged and photograph regarding farm, village or cluster level information in the PoCRA digital platform such as</p> <ul style="list-style-type: none"> <li>- Cropping pattern</li> <li>- Crop Area Sown</li> <li>- Pest infestation</li> <li>- Disease infestation</li> <li>- Abiotic and Biotic Stress</li> <li>- Drought</li> <li>- Floods</li> </ul>

Sr. No	User	Action	Object	Functional Description
				<ul style="list-style-type: none"> <li>- Micro-climate parameters such as rainfall, relative humidity, soil moisture, temperature, soil components etc.</li> <li>- Crops to be sown this season</li> </ul>
6.40.	Farmer/Authorized Stakeholders	Input	Farm Information	<p>Farmer should be able to input information including geo-tagging and photograph/ image of his farm in the PoCRA digital platform such as</p> <ul style="list-style-type: none"> <li>- Crop Area Sown</li> <li>- Pest infestation</li> <li>- Disease infestation</li> <li>- Abiotic and Biotic Stress</li> <li>- Drought</li> <li>- Floods</li> <li>- FPO memberships</li> <li>- Micro-climate parameters such as rainfall, relative humidity, soil moisture, temperature, soil components etc.</li> </ul>
6.41.	Farmer/Authorized Stakeholders	Input	Advocacy videos	Farmers should be able to upload experience and learning videos on a moderated public forum
6.42.	PoCRA digital platform	Analyse	Images	PoCRA digital platform should have an ability to recognise symptoms of biotic and abiotic stresses presented on crop surface area and soil. Not OCR.
6.43.	PoCRA digital platform	Pull	Data from all sources	PoCRA digital platform should have ability to consolidate data from all data sources
6.44.	PoCRA digital platform	Analyse	Consolidated data from all sources	PoCRA digital platform should be able to synthesize the data from all public sector sources and analyse the data using algorithms, to ascertain its usability, importance and priority. PoCRA digital platform should be able to run algorithms to analyse the data such that it is able to

Sr. No	User	Action	Object	Functional Description
				provide a consolidated view of each farmer
6.45.	SAU/KVK/ PoCRA PMU	View	Synthesized and analysed data	Authorised stakeholders in public sector institutes such as SAUs and KVKs and/or PoCRA PMU should be able to view synthesized and analysed data as received from all public sector sources, analysed to a farmer level
6.46.	Call Centre Agent	View	Synthesized and analysed data	Call centre agent should be able to view synthesized and analysed data as received from all public sector sources, analysed to a farmer level
6.47.	SAU/KVK authorised personnel	Input	Advisory basis the parameters	Authorised personnel in public sector institutes such as SAUs and KVKs should be able to input advisory basis the following parameters and data (captured from various public sector sources) but not limited to crop, crop-stage, weather, soil health, geographic location, commodity prices (past, present and future), cost of crop production, farmer details (such as socio-economic status, loan status), storage requirements, FPO linkages
6.48.	SAU/ KBK authorised personnel	Input	Crop Calendar	Authorised personnel in public sector institutes such as SAUs and KVKs should be able to input crop wise crop calendar that explains month-wise crop management practices like sowing, fertiliser application, pesticide spray, weedicide spray, insecticide spray, fungicide spray, harvesting etc. across the crop lifecycle considering cropping differences customised to geographic location
6.49.	PoCRA digital platform	Analyse and develop	Advisory issuing process	PoCRA digital platform should be able to learn from the advisory cards as provided by the SAUs and KVKs considering various parameters. Eventually, PoCRA digital platform should be able to provide error free and



Sr. No	User	Action	Object	Functional Description
				self-reliant advisory customised to each farmer
6.50.	Farmer/Beneficiary	View	Specific advisory via mobile and/or mobile advisory platform	<p>Farmers and CA/ AA on behalf of farmers should be able to enter key details including crop, crop rows, seed rate and date of sowing. Farmers may choose to input other operations on the field.</p> <p>Basis the synthesised and analysed data on various parameters like commodity, pest, disease etc. with KVK and SAU inputs the, application simulates models like empirical crop models, regional suitability models, biophysical models meta-models and decision models alongwith running smart analytics.</p> <p>Resultantly, farmers should be able to view customised and <b>dynamic crop advisory</b> basis crop stage, the changing parameters such as weather, commodity prices, pests and diseases, soil health, warehouse availability and past &amp; forecasted climatic conditions, customized to their field on mobile and/or web application. The crop advisory may include sowing date, fertilizer application, pesticide &amp; insecticide spray, harvesting and more.</p> <p>The advisory should be presented in easily understandable form, using the following but not limited to farm/ field map, maps, pins, smart illustrations, graphs, graphics, images and icons. Besides, the farmer should be able to view videos, illustrations and/or hear audios about leading practices of crop management as input by KVK, SAU, PoCRA PMU and peer farmers</p>

Sr. No	User	Action	Object	Functional Description
				Integrated view: Farmers should be able to choose crops they have grown using icons and input number of rows and date of sowing. PoCRA digital platform should be able to grow the crops digitally basis the date of sowing as provided. For every day, week and month, PoCRA digital platform should provide advisory basis the past, present and forecasted, weather and other parameters. PoCRA digital platform should be able to inform fertilizer dosage, how-to-do illustrations/ videos, warn about possibilities of pest attack and pest management, recommend apt time of harvest and display market prices using maps, provide a view of banks, financial institutions, agri-input dealers over a map. It should provide end-to-end holistic solution for the farmer digitally
6.51.	Farmer/Beneficiary	View	Specific advisory through SMS and IVR	Farmers and CA/ AA on behalf of farmers should be able to enter key details including crop, crop rows, seed rate and date of sowing. Farmers and CA/ AA on behalf of farmers may choose to update other farming operations on the field. Basis the synthesised and analysed data with KVK and SAU inputs, farmers should be able to view customised and specific advisory in local language through SMS and IVR
6.52.	Farmer/Beneficiary	View	Farm plans	Farmers and CA/ AA on behalf of farmers should be able to enter key details including crop, crop rows, seed rate and date of sowing. Farmers may choose to input other operations on the field. Basis the synthesised and analysed data on various parameters like commodity, pest, disease etc. with KVK and SAU inputs the application simulates models like empirical crop models, regional suitability models, biophysical models meta-models and

Sr. No	User	Action	Object	Functional Description
				<p>decision models alongwith running smart analytics.</p> <p>Resultantly, farmers should be able to view dynamic <b>farm plans</b> that forecast input costs and predict production, yield, profits etc. basis climate smart crop modelling and analytics considering real-time, near-real time and/ or static data from various sources including weather, commodity prices, pests and diseases, geography, soil texture and health, warehouse availability and past &amp; forecasted climatic conditions, customized to their field on mobile and/or web application.</p> <p>The farm plan should be presented in easily understandable form, using the following but not limited to farm/ field map, maps, pins, smart illustrations, graphs, graphics, images and icons.</p> <p>Besides, the farmer should be able to view videos, illustrations and/or hear audios about leading practices of crop management as input by KVK, SAU, PoCRA PMU and peer farmers</p>
6.53.	Farmer/Beneficiary	Access	Call Centre	<p>Farmers and CA/ AA on behalf of farmers should be able to enter key details including crop, crop rows, seed rate and date of sowing. Farmers may choose to update other farming operations on the field. Basis the synthesised and analysed data with KVK and SAU inputs, farmers should be able to get customised advisory in local language through Call centre. Additionally, they should be able to ask queries, transmit/ show their on-field issue through live video streaming and provide feedbacks, grievances and ratings for services provided by PoCRA</p>

Sr. No	User	Action	Object	Functional Description
6.54.	Farmer/Aut horized Stakeholde rs	Receive	Advisory basis the parameters	Call centre agent should be able to provide customised farmer level advisory basis the following parameters and data captured from various public sector sources) but not limited to crop, crop-stage, weather, soil health, geographic location, commodity prices (past, present and future), cost of crop production, farmer details (such as socio-economic status, loan status), storage requirements, FPO linkages
6.55.	Farmer/Be neficiary	Post	Questions on mobile and web application	Farmers should be able to ask questions to experts at public sector organisations such as KVK, SAU and PoCRA PMU
6.56.	PoCRA digital platform	Assign	Personnel	PoCRA digital platform should be able to automatically assign personnel to address all queries of farmers and ensure responses to queries.
6.57.	PoCRA assigned personnel	Post	Questions asked by farmers on mobile/ web application	Assigned personnel should be able to view all farmer and consolidated and synthesised databases to respond to query. Assigned personnel would be alerted for responding to notifications basis the logic provided by PoCRA PMU
6.58.	PoCRA digital platform	Raise	Alerts/Escalat es	PoCRA digital platform should be able to initiate escalation if, within a decided period of time, the personnel responsible for response doesn't respond. Escalation would take place basis the logic provided by PoCRA PMU.
6.59.	PoCRA digital platform	Create/Up date	FAQs	PoCRA digital platform should be able to create, maintain, update and provide rating of Frequently Asked Questions (FAQs).
6.60.	Relevant Stakeholde r	View	FAQs	All stakeholders should be able to view the FAQs.

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## 7 Climate Disaster Management

### 7.1 Overview

The objective of this application is to better prepare and plan for dealing with climate emergencies and disaster. The resultant application would incorporate need-based early warning so as to enable humanitarian-response activities and mitigation strategies in order to respond effectively to extreme climate events. The functionalities have been laid down with respect to the requirement arising from both, preparedness as well as response.

This application would consist of a training management application wherein disaster response training would be imparted and monitored for farmers, PoCRA functionaries and other relevant stakeholders. E-learning modules and toolkits would also be provided to these actors, with the understanding that all such stakeholders need to be sensitized on disaster events and mitigation strategies. Some of the other interesting functionalities would include an analytics platform that would have a spatial map view with integrated information of various data including watershed structures, soil data, village resource data, and climate and weather data which would be able to inform of potential disasters and assist in recovery strategy.

Application functionality would include detecting early warnings signs and disseminating alerts and notifications to relevant stakeholders. This mapping would also include identifying and monitoring drought response reservoirs and strategic response zones as per the type of climate disaster. Crop and livestock contingency plans, with mapping of warehouses for crop storage and fodder camps have also been included in this application's functionality.

Other functionality of responding to the disaster include an SOS button, location mapping of the issues being reported and colour-coded map view defining the criticality of disaster and disaster affected areas for the PMU, such that this can assist in timely and efficient decision making. Overall the application would be designed to incorporate early warning mechanisms and support in timely mobilization of resources needed to prepare for, and respond to emergencies in order to protect livelihood applications.

This application contributes to the success of the project by delivering information to the affected beneficiaries at the right time. In case of disasters, the PoCRA functionaries would need information on the areas under distress along with levels while the farmers would need information on rescue plans, current weather conditions, predicted weather conditions, nearest warehousing for storing produce, contingency plans, etc. This application would use spatial and color coded maps that are being updated in real time to help all stakeholders of the project.

## 7.2 Indicators

The following table depicts indicators used to measure the performance and efficacy of the activity, information and services provide by this application. A detailed understanding and narration of indicators alongwith component and sub-component wise indicator mapping can be found in annexure 11.1 and 11.2

Indicator type	Name of Indicator	Unit of measure	Frequency	Source
Project Development Objectives (PDO) indicators	Farmers reached with agricultural assets or services	Number	Semi-annual	POCRA MIS
<b>Intermediate indicators</b>	-	-	-	-

## 7.3 Features

- ▶ This application would provide information, notifications and alerts (including early warning alerts) to all beneficiaries like farmers and PoCRA stakeholders in case of disasters and crisis.
- ▶ E-learning modules would be provided to all stakeholders on how to handle disasters and crisis
- ▶ This application would relay real time information and contingency plans coming from various government agencies in times of disasters and crisis.
- ▶ This application would have GIS maps to indicate nearest warehouses to store produce, fodder camps; etc.

## 7.4 Functional Requirement Specifications (FRS)

S.No	User	Action	Object	Functional Description
7.1.	PMU	Upload	Training	PMU and PoCRA appointed personnel should be able to upload training modules for farmers and PoCRA stakeholders to ensure they are equipped to deal with crisis and disasters
7.2.	Farmer/Po CRA functionaries	Receive	Training	Farmers and PoCRA stakeholders should be able to receive trainings on crisis and disaster management
7.3.	PoCRA digital platform	Maintain	Training Management System	Application should be able to upload attendance of Farmers, PoCRA Functionaries and

S.No	User	Action	Object	Functional Description
				Trainers and update the crisis and disaster trainings in the attendance management applications
7.4.	PMU	View	Attendance Dashboard	PMU should be able to view the attendance dashboard, such that they can organise for new training modules as well as monitor aspects related to people who have received training
7.5.	Call Centre Agent	View	Attendance Dashboard	Call Centre agents should be able to get a dashboard view of the farmers and PoCRA functionaries who have not attended the training for disaster and crisis preparedness and response and the agent should be able to follow up on these individuals
7.6.	PoCRA digital platform	Forward	e-Learning and toolkits	Application should be able to forward E-learning and hand out booklets/toolkits to farmers and stakeholders from time to time giving them information on current weather conditions and how to deal with climate disasters and crisis
7.7.	PoCRA digital platform	Pull	Watersheds and watershed development data	PoCRA digital platform should be able to capture data about watersheds and watershed development from public sector platforms such as MRSAC, Integrated Watershed Management Programme - Vasundhara Panlot Vikas, Farm ponds on demand and Jalyukt Shivar Abhiyaan
7.8.	PoCRA digital platform	Pull	MLP	Application should be able to pull data village level mapping of resources from MLP- Micro Level Planning, so as to get a

S.No	User	Action	Object	Functional Description
				complete picture of existing resources to respond during different kinds of disasters and crisis
7.9.	PoCRA digital platform	Pull	Soil data	Application should be able to pull data of soil health, agro-climatic zones from relevant government websites
7.10.	PoCRA digital platform	Pull	Weather and climate data	Application should be able to extract weather and climate data from satellites, automatic weather stations, state and central government agencies and other appointed agencies and weather bodies
7.11.	PoCRA digital platform	Analyse	Early warning signs	Application should be able to apply advanced algorithms and analytics to detect early warning signs
7.12.	PoCRA digital platform	Create/Update	Map View	Application should be able to integrate and map all the data on a spatial map view, to better plan for disaster response
7.13.	PMU	Map	Refuge structures	PMU should be able to identify and map all areas/structures that would be used in case of crisis and disasters. For e.g. during flash floods, schools that would be used for refuge area would be mapped on the map
7.14.	PoCRA stakeholders, farmers, state and central government agency	Receive	Warnings, alerts and notifications	Application should be able to send early warnings and alerts to farmers, state and central government agencies, disaster and crisis response teams, PoCRA stakeholders and other authorised stakeholders



S.No	User	Action	Object	Functional Description
7.15.	PMU	View	Dashboard	PMU should be able to view a dashboard, where the map is colour-coded showing the weather conditions in each village in real time. For e.g.: Village on map would be green illuminated for normal rain fall
7.16.	PoCRA digital platform	Receive	Drought monitoring data	Application should be able to receive drought monitoring data. This should be relayed real time from sensors, soil, state and central government agencies, automatic weather stations and other sources
7.17.	Relevant Stakeholder	Update	Drought response reservoirs	PoCRA stakeholders should be able to monitor the levels of all water reservoirs and bodies identified for drought response and update the data on PoCRA digital platform. For e.g. stakeholders to ensure water levels are maintained in the foresight of approaching drought season
7.18.	PocRA staff	Receive	Warnings, alerts and notifications	Application should be able to send alerts to identified stakeholders in case of water level of reservoirs and water bodies identified goes below defined level
7.19.	PMU	Upload	Strategic response zones	PMU should be able to identify and group villages into strategic response zones according to the availability of structures and water bodies around the villages to provide prompt relief in times of disaster and crisis. For e.g. During a flood, elevated area identified in the vicinity of the

S.No	User	Action	Object	Functional Description
				villages would be used to provide security to Livestock
7.20.	PMU/ PoCRA appointed personnel	Upload	Crop contingency plans	PMU and appointed agencies should be able to update the crop contingency plans along with information of farmer's and their produce related information
7.21.	PMU/ PoCRA appointed personnel	Upload	Warehouses/cold storage information	PMU and appointed agencies should be able to upload crop contingency plans. The related information should be uploaded in a map view of all available warehouses/cold storage along with their capacity in order to store farm produce in times of crisis and disasters
7.22.	PMU/ PoCRA appointed personnel	Upload	Farmer to warehouses/cold storage information	Crop contingency plans should have the mapping of farms to warehouses/cold storage so that farmers can move their produce to the nearest warehouses in case of crisis or warnings
7.23.	Farmer/Aut horized Stakeholder s	Receive	notifications/information on warehouse/storage	PMU should be able to define subsidized warehouse rates and communicate to the farmers, the rate and location for the nearest warehouses in cases of crisis and disasters
7.24.	PMU/ PoCRA appointed personnel	Upload	Farmer to Livestock contingency plans	PMU and appointed agencies should be able to upload Livestock contingency plans. These should have the mapping of farms/farmers to refuge areas for livestock, fodder camps, veterinary hospitals for farmers to move their livestock to the nearest areas in case of crisis or warnings

S.No	User	Action	Object	Functional Description
7.25.	PMU/ PoCRA appointed personnel	Update	Livestock contingency plans	PMU and appointed agencies should be able to update the livestock contingency plan
7.26.	PoCRA authorized stakeholder s	Receive	Warnings, alerts and notifications	The mobile application/portal should have a SOS button which the PoCRA authorized stakeholders/ functionaries can use in times of crisis and disasters. This would trigger a notification to control room, help desk, state and central government agencies and other agencies
7.27.	PMU	View	Spatial map	The PMU should be able to view a spatial map of all such mapped farms/farmers/stakeholders to trace the exact zones affected
7.28.	Farmer/Aut horized Stakeholder s	Receive	Warnings, alerts and notifications	Farmers should be able to get timely alerts and announcements through SMS/Call/App and any other channel as prescribed by PoCRA
7.29.	Farmer/Aut horized Stakeholder s	Receive	Disaster recovery plan	PMU/ Appointed agencies should be able to flash the disaster recovery plan for each farmer on App/SMS/Call or any other channel as prescribed by PoCRA
7.30.	PMU	View	Dashboard	Application should be able to provide a dashboard view - A map consisting of all villages and colour coded according to the chances of crisis in that village and this map should be updated real time according to current conditions

## 8 Monitoring and Evaluation Application

### 8.1 Overview

This Application would be able to capture the monitoring and evaluation of activities of PoCRA. It seeks to help monitor the interventions of the project, resulting in commensurate outcomes. The application would be able to facilitate controlled data collection, monitoring, linkages to M&E agencies, data analysis and generation of reports, regarding PoCRA activities. The application would be able to provide a dashboard view for village, block, district and a comprehensive project level view.

The application would be used by the following stakeholders

- ▶ PoCRA staff including AA, CA, AO, TAO, DSAO, SDAO, PoCRA PMU and all members as authorised by PoCRA PMU
- ▶ M&E agencies authorised by PoCRA PMU

### 8.2 Features

**Monitoring and Evaluation application** would have the following features and functions

<b>Inputs to PoCRA digital platform</b>	<b>Analysis by PoCRA digital platform and/or KVK/ SAU</b>	<b>Key outputs provided by PoCRA digital platform</b>
<ul style="list-style-type: none"> <li>▶ Data captured from M&amp;E agencies</li> <li>▶ Data input by PoCRA staff</li> <li>▶ Data captured from baseline surveys done in the past</li> </ul>	<ul style="list-style-type: none"> <li>▶ PoCRA digital platform would run algorithms and analyse raw data</li> <li>▶ PoCRA digital platform would be able to cross check with results of M&amp;E agencies reports and its own analysis</li> </ul>	<ul style="list-style-type: none"> <li>▶ Relevant stakeholders (detailed in the FRS) would be able to view consolidated and relevant dashboard informing about the status of activities in geography relevant to them creatively presented using features such as search, filter, colour coding, maps, graphs and charts, illustrations and images</li> <li>▶ Relevant stakeholders would be able to search, filter and compare data with criteria like timeline, activities, geography</li> </ul>

### 8.3 Indicators

Monitoring and Evaluation (M&E) agencies alongwith the PoCRA digital platform will track all the indicators as mentioned in annexures 11.1 and 11.2

## 8.4 Functional Requirement Specifications (FRS)

Sr. No	User	Action	Object	Functional Description
8.1.	PoCRA digital platform	Pull	Raw data from Monitoring and Evaluation agencies	PoCRA digital platform should be able to pull data from platforms of monitoring and evaluation agencies
8.2.	PoCRA digital platform	Pull	Analysed reports from Monitoring and Evaluation agencies	PoCRA digital platform should be able to pull analysed reports from platforms of monitoring and evaluation agencies
8.3.	PoCRA digital platform	Pull	Data from baseline surveys, surveys and reports	PoCRA digital platform should be able to pull data from baseline surveys, surveys and reports as generated by Government of Maharashtra and relevant departments
8.4.	PoCRA PMU	View	Analysed reports from Monitoring and Evaluation agencies	PoCRA PMU should be able to view, download and print analysed reports from platforms of monitoring and evaluation agencies
8.5.	DoA/PoC RA Staff	Input	Data using mobile application and web portal	PoCRA officials and Department of Agriculture officials including CA, AA, AO, TAO, DASO, SDAO, PD-ATMA, Agriculture Specialist-PD ATMA and all officials as requested by PoCRA PMU should be able to input data on forms as prescribed by PoCRA PMU. The users should be able to input data on mobile application and web portal in online and offline mode.
8.6.	DoA/PoC RA Staff	Input	Data through Geotag and photograph	PoCRA officials and Department of Agriculture officials including CA, AA, AO, TAO, DASO, SDAO, PD-ATMA, Agriculture Specialist-PD ATMA and all officials as requested by PoCRA PMU should be able to input data on forms as prescribed by PoCRA PMU. The users should be able to geo-tag and upload photographs
8.7.	PoCRA digital platform	Update	Data input periodically	PoCRA digital platform should be able to periodically and automatically save the data entered by the user into the application during a live session and should be able to make the data available to the user as intermediate save even after expiry of the session

Sr. No	User	Action	Object	Functional Description
8.8.	PoCRA digital platform	Record	Date and time of entries	The application should be capable of capturing the date and time when the entries are made in the application or capture the date and time of data entries from the platforms of M&E applications
8.9.	PoCRA digital platform	Disallows	Edit after submission	PoCRA digital platform should not allow modification of details once submitted
8.10	PoCRA digital platform	Analyse and update	Data	PoCRA digital platform should be able to run algorithms to analyse data as input by PoCRA and DoA officials and pulled from platforms of monitoring and evaluation agencies. It should be able to store and classify the data needed to produce reports as per any give criteria either by category, by progress, and many options as will be stated. It should be able to analyse the data such that it should be able to provide a consolidated picture of the PoCRA activities and outcomes relevant to each level of PoCRA hierarchy
8.11	PoCRA digital platform	Analyse and update	Data	PoCRA digital platform should be able to run algorithms to analyse raw data as shared by M&E agencies, results and reports should be cross checked with the M&E agency reports. Errors by M&E agencies should be highlighted by the PoCRA digital platform
8.12	PoCRA digital platform	Display	Dashboards	PoCRA digital platform should be able to provide a dashboards relevant and limited to each stakeholder with data and downloadable reports (in formats such as .pdf, .xls/xlsx, .png, .jpg) related to each and every PoCRA activities and especially related to project development indicators (refer annexures). The said dashboard should be creatively presented to include features such as graphics, images, maps, graphs and charts, filters, search, illustrations

Sr. No	User	Action	Object	Functional Description
8.13	PoCRA digital platform	Update	Dashboards	PoCRA digital platform should be able to update dashboards at frequency as prescribed by PoCRA
8.14	AA/CA/PoCRA staff	View	Dashboards	AA, CA and other relevant PoCRA staff along with VCRMC and gram panchayat should be able to view consolidated relevant data and reports in a dashboard form creatively presented using features such as search, filter, colour coding, maps, graphs and charts, illustrations and images
8.15	PoCRA digital platform	View	MIS Reports	Application should be able to generate criteria and filter and comparison based MIS report and provide option to download data and reports in in the pre-defined file format (e.g. MS Excel, MS Word, etc.) and provision to print or a Print Layout features for the reports being printed from the application.
8.16	AA/CA/PoCRA staff	View	MIS Reports	AA, CA and other relevant PoCRA staff along with VCRMC and gram panchayat should be able to generate and view criteria and filter based MIS report. The users should be able to download data and reports in the pre-defined file format (e.g. MS Excel, MS Word, etc.) and provision to print or a Print Layout features for the reports being printed from the application
8.17	AA/CA/PoCRA staff	View	MIS data	AA, CA and other relevant PoCRA staff along with VCRMC and gram panchayat should be able to filter, search and compare data and generate MIS reports with given criteria. Past, present and near-real time data may be filtered and compared with features such as graphs and charts
8.18	PoCRA digital platform	View	Report	PoCRA digital platform should provide a report for the monitoring of the status of the data entry process and should alert the block, district and state level Users of the blocks/tehsils for which the data is not being entered on regular basis

Sr. No	User	Action	Object	Functional Description
8.19	PoCRA Staff	View	Missing data entry	Relevant PoCRA officials at gram panchayat, block and district should be able to see alerts about missing data
8.20	AA/CA/PoCRA staff	Input	Anomalies pertaining to PoCRA activity implementation	AA, CA and other relevant PoCRA staff should be able to input anomalies pertaining to PoCRA activities (e.g. Physical verification of a small pond results into realisation that no farm pond has been developed)
8.21	PoCRA digital platform	Pull	Anomalies pertaining to PoCRA activity implementation	PoCRA digital platform should be able to pull anomalies pertaining to PoCRA activity implementation (egg. Physical verification of a small pond results into realization that no farm pond has been developed)
8.22	PoCRA PMU	View	Alerts regarding anomalies to PoCRA activity implementation	PoCRA PMU should be able to view alerts regarding anomalies to PoCRA activity implementation



## 9 Finance and accounting application

The core financial and accounting application includes the following functions.

Sr. No.	Functions	Description
1.	Project fund management (budget and expenditure monitoring)	<ul style="list-style-type: none"> <li>▶ Preparation of physical and financial targets (Annual work plan/ Annual budget)</li> <li>▶ Approval of targets, fund allocation and disbursement</li> <li>▶ Utilization of funds and booking of expenditure</li> <li>▶ Fund monitoring</li> </ul>
2.	Project management and support (Vendor payment Management including office establishment, consultancy, incremental cost, M&E and ICT)	<ul style="list-style-type: none"> <li>▶ Payee Information Maintenance</li> <li>▶ Payment Execution</li> <li>▶ Payment Confirmation and Follow-up</li> </ul>
3.	HR expenditure management	<ul style="list-style-type: none"> <li>▶ Salary and allowances to deputation staff</li> <li>▶ Salary and allowances to contract staff</li> <li>▶ Salary and allowances to outsourced staff</li> </ul>
4.	Financial reporting	<ul style="list-style-type: none"> <li>▶ IFRs</li> <li>▶ Project ledger generation</li> <li>▶ General Reporting</li> <li>▶ Ad hoc query</li> </ul>
5.	Monitoring of audit and audit compliance	<ul style="list-style-type: none"> <li>▶ Monitoring of internal audit at all accounting centers</li> <li>▶ Monitoring of internal auditor's report compliance</li> <li>▶ Monitoring of CAG audit at all accounting centers</li> <li>▶ Monitoring of CAG auditor's report compliance</li> </ul>

### 1. Project fund management (budget and expenditure monitoring)

#### 1.1. Preparation of physical and financial targets (Annual work plan/ Annual budget)

Sr. No.	User	Action	Object	Functional Description
9.1	Users such as accounting assistant at district and Sub-division level, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	View	Status of project in previous financial years	Users such as accounting assistant at district and Sub-division level, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to view achievements, fund lapse and spill over of the previous financial year/s

Sr. No.	User	Action	Object	Functional Description
9.2	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	Input and confirm	Physical, Financial targets and annual work plan/ annual budget basis the AAP	<p>Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to input and confirm physical, financial targets and annual work plan/ annual budget basis the AAP (refer to annexure 6.1 in Financial Management Manual) with the following application features</p> <ul style="list-style-type: none"> <li>• Isolated access to district level user basis his or her geographic territory</li> <li>• Users should have access to relevant document including MLP, DPR, AAP etc.</li> <li>• Targets should be set in format as prescribed by PoCRA PMU. It includes component, sub-component, object code, month, quarter and year wise target</li> <li>• The components, sub-component and object-code should be searchable such that three letters can provide predictive options</li> <li>• PoCRA digital platform should be able to issue alerts and notifications in this regard to input physical and financial targets within stipulated time</li> </ul>
9.3	PoCRA digital platform	Calculate	Financial targets	PoCRA digital platform should be able to calculate financial targets automatically basis

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Sr. No.	User	Action	Object	Functional Description
				physical targets and logic as provided by the PoCRA PMU
9.4	PoCRA digital platform	Calculate	Object code wise external and internal share of funds	PoCRA digital platform should be able to calculate and segregate physical and financial targets object code wise under external (70%) and internal (30%) fund shares as per the logic provided by PoCRA PMU

## 1.2. Approval of targets, fund allocation and disbursement

Sr. No.	User	Action	Object	Functional Description
9.5	Users such as accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	View	Status of project in previous financial years	Users such as Accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to view achievements, fund lapse and spill over of the previous financial year/s; district-wise, sub-division wise, cluster wise and village wise.
9.6	Users such as accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	Input	Approved physical and Financial budgets	<p>Users such as accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to input approved physical and financial targets and budget</p> <ul style="list-style-type: none"> <li>Approved targets should be input in format as prescribed by PoCRA PMU. It includes component, sub-component, object code, month, quarter and year wise target</li> <li>User will be required to upload minutes of the meeting while s/he inputs approved physical and financial targets</li> <li>The components, sub-component, object-code, district, sub-division, cluster and village names should be searchable such that three letters can provide predictive options</li> </ul>
9.7	PoCRA digital platform	Create and send	Allotment documents for digital distribution	PoCRA digital platform should be able to create and send allotment documents for digital distribution at each distribution level.
9.8	PoCRA digital platform	Verifies	Financial targets and funds allotted	PoCRA digital platform should be able to verify Financial targets and funds allotted do not exceed the amount of funds available for allotment or sub-allotment at each distribution level.

9.9	Users such as accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	Input and upload	Allotment and disbursement documents	Users such as accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to input allotment details such as BEAMS number, amount, date etc. and upload disbursement documents
9.10	DDO, SDAO, DSAO and personnel authorised by PoCRA PMU	Input and upload	Allotment and disbursement documents	DDO, SDAO, DSAO and personnel authorised by PoCRA PMU should be able to input fund release details such as NEFT, RTGS or cheque number, date of fund release, order etc. and upload disbursement documents when release funds to VCRMC and ATMA
9.11	Users such as VCRMC, accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	View	Approved budget	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to view approved budget specific to the territory
9.12	PoCRA digital platform	Calculate	Object code wise external and internal share of funds allocated and disbursed	PoCRA digital platform should be able to calculate and segregate approved physical and financial targets object code wise under external (70%) and internal (30%) fund shares as per the logic provided by PoCRA PMU
9.13	PoCRA PMU	Edit	Physical and Financial targets	PoCRA PMU should be able to edit physical and financial targets as per the requirements and status of the project

### 1.3. Utilization of funds and booking of expenditure

Sr. No.	User	Action	Object	Functional Description
9.14	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and	View	Financial targets and fund allocation	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to view financial targets and budget allocation

	authorised personnel of PoCRA PMU			
9.15	Users such as authorised personnel of VCRMC, accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	Input	Expenditure	Users such as authorised personnel of VCRMC, accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU (for PMU funds only) and authorised personnel of PoCRA PMU should be able to input expenditure of funds financial year, component, sub-component and object code wise for relevant farmer, gram panchayat, cluster, sub-division or district. The authorised user at each level should be able to input expenditure for that level only
9.16	Users such as authorised personnel of VCRMC, accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	View	Budget status	Users such as authorised personnel of VCRMC, accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to view budget status – spent amount, booked amount, budget cap etc. on a dashboard specific to the territory. The dashboard should be creatively presented that includes graphs, charts, bars etc.
9.17	PoCRA digital platform	Calculate	Object code wise external and internal share of funds allocated and disbursed	PoCRA digital platform should be able to calculate and segregate expenditure as per the object code under external (70%) and internal (30%) fund shares with the logic provided by PoCRA PMU
9.18	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	View, download and print	Fund utilisation status	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to view, download and print fund utilisation status of relevant gram

				panchayat, cluster, sub-division or district
9.19	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	View	Dashboard/ Ledger	<p>Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to view, download (in formats including .xlsx, .pdf etc) and print, relevant Dashboard/ Ledger that includes the parameters such as:</p> <ul style="list-style-type: none"> <li>• Financial year, component, sub-component and object code wise physical and financial targets from a farmer, gram panchayat, cluster, sub-division, district up to state level</li> <li>• Beneficiary applications to various schemes segregated by component, sub-component and project activity</li> <li>• Approval and / or supporting approvals, verification and confirmation on applications as accorded by individuals/ agencies such as VCRMC, AA, CA, AO, TAO, SDAO, DSAO, ATMA officials, PoCRA PMU officials and all officials as required by PoCRA PMU</li> <li>• Pre-sanction approval, sanctioned amounts and released amounts should also be reflected on the Dashboard/ Ledger</li> <li>• Detailed expenditure till date and projected expenditure</li> <li>• Fund availability and expenditure at cluster, sub-division and district level</li> </ul>

				<ul style="list-style-type: none"> <li>The dashboard should be creatively presented that includes graphs, charts, bars etc.</li> <li>The dashboard should include percentages of applications processed, pre-sanctioned letters, sanction letter, expenditure, work complete etc.</li> </ul>
9.20	PoCRA digital platform	Create	Alerts	PoCRA digital platform should be able to raise alerts in cases of any anomalies such as double entry of expenditure, duplicate booking expenditure, cross-entry of expenditure under components, sub-components or activity, error in input of year and months etc. PoCRA digital platform should be able to cross verify with documents such as pre-sanction letter, objects etc.
9.21	PoCRA digital platform	Maintain	Historical data	PoCRA digital platform should be able to maintain data on all commitments (pre-sanction cases), obligation and payment

#### 1.4. Fund monitoring

Sr. No.	User	Action	Object	Functional Description
9.22	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	Input	Bank balance	Users such as accounting assistant at district and Sub-division level, DSAO, SDAO, PD-ATMA, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to input bank details and balance into the application as per the frequency decided by PoCRA PMU. PoCRA digital platform should be able to issue alerts and notifications in this regard to input bank balance within stipulated time.



9.23	Accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	View	Dashboard	<ul style="list-style-type: none"> <li>Accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to view dashboard that includes bank balance status of various accounting levels.</li> <li>The dashboard should be creatively presented that includes graphs, charts, bars etc.</li> </ul>
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## 2. Project management and support (Vendor payment Management including office establishment, consultancy, incremental cost, M&E and ICT)

PoCRA is required to make payments for hiring consultants, expenditure on purchasing assets etc. The financial and accounting module will perform the following functions

- ▶ Payee Information Maintenance
- ▶ Payment execution

### 2.1. Payee information maintenance

The term “payee” includes any entity or individual to which disbursement may be made. PoCRA may be required to make payments to individuals and organizations providing goods and services, and other Government agencies.

Sr. No.	User	Action	Object	Functional Description
9.24	PoCRA PMU	Input and Edit	Vendor information	PoCRA digital platform should be able to input and edit vendor information such as name, type, address, bank account details, legal details, tax identification number etc.
9.25	PoCRA digital platform	Maintain	Vendor information	PoCRA digital platform should be able to maintain vendor information such as name, type, address, bank account details, legal details, tax identification number etc.

## 2.2. Payment execution

Sr. No.	User	Action	Object	Functional Description
9.26	PoCRA PMU	Input	Vendor payment information and confirmation	PoCRA digital platform should be able to input vendor payment information and confirmation such as date of payment, date of confirmation of payment by vendor, payment instrument, name, invoice number etc. Besides, the user should be able to input component, sub-component and object code-wise payment segregation (excluding salaries and allowances)
9.27	PoCRA digital platform	Maintain	Vendor payment information	PoCRA digital platform should be able to maintain vendor payment information such as date of payment, date of confirmation of payment by vendor, payment instrument, name, invoice number etc. Besides, the PoCRA digital platform should be able to maintain component, sub-component and object code-wise payment segregation
9.28	PoCRA PMU	Views	Vendor payment Dashboard/ Ledger	PoCRA PMU should be able to view vendor payment Dashboard/ Ledger includes vendors payments under processing, payment dates, payment related issues and remarks. The dashboard should be creatively presented that includes graphs, charts, bars etc.

### 3. HR expenditure management

Sr. No.	User	Action	Object	Functional Description
9.29	PoCRA PMU	Input and Edit	Human resource information	PoCRA digital platform should be able to input and edit human resource information such as name, type such as deputation staff, on-contract consultants, outsourced staff, address, bank account details, tax number etc.
9.30	PoCRA digital platform	Maintain	Human resource information	PoCRA digital platform should be able to maintain Human resource information such as name, type such as deputation staff, on-contract consultants, outsourced staff, address, bank account details, tax number etc.
9.31	PoCRA PMU	Input	Human resource salary and allowances payment information	PoCRA digital platform should be able to input salary and allowances payment details paid to deputation staff, on-contract consultants and outsourced staff. Details to be input include payment information and confirmation such as reference number, date of payment, payment instrument, etc. Besides, the user should be able to input component, sub-component and object code-wise payment segregation
9.32	PoCRA digital platform	Maintain	Human resource salary and allowances payment information	PoCRA digital platform should be able to maintain salary and allowances payment details paid to deputation staff, on-contract consultants and outsourced staff. Details to be input include payment information and confirmation such as reference number, date of payment, payment instrument, etc. Besides, the user should be able to maintain component, sub-component and object code-wise payment segregation
9.33	PoCRA PMU	Views	Human resources salary and allowances payment	PoCRA PMU should be able to view salary and allowances payment Dashboard/ Ledger includes component, sub-component and object code-wise payment segregation, salary

			Dashboard/ Ledger	payments under processing, payment dates, payment related issues and remarks. The dashboard should be creatively presented that includes graphs, charts, bars etc.
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#### 4. Financial Reporting

The Core financial application must provide complete, reliable, consistent, timely and useful financial management information on operations. Such information would enable PoCRA to effectively deliver programs by relating financial consequences to program performance.

Sr. No.	User	Action	Object	Functional Description
9.34	Users such as DSAO, SDAO, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU	Create	Interim Finance Report (IFR)	Users such as DSAO, SDAO, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU should be able to create IFR (Refer to format in Financial Management Manual – annexure 8.9 format 1-4). PoCRA digital platform should be able to auto-populate relevant fields as input in the application time-to-time by stakeholders including DSAO, SDAO, accounting official at PoCRA PMU and authorised personnel of PoCRA PMU. PoCRA digital platform should be able to calculate and segregate physical and financial targets object code wise under external (70%) and internal (30%) fund shares as per the logic provided by PoCRA PMU
9.35	PoCRA digital platform	Analyse	Financial transactions	PoCRA digital platform should be able to run algorithms to analyse financial transactions to generate clean accounts
9.36	PoCRA PMU	View	MIS Reports	PoCRA PMU should be able to view, download (in formats such as .xlsx and .pdf) and print MIS reports and transmittable files using data maintained by the Core financial management application as per the components, sub-components, activity and object codes
9.37	PoCRA digital platform	Create	Report formats	PoCRA digital platform should be able to create reports in hard copy

				and electronic formats required by the Department of Agriculture, Treasury etc. as provided by PoCRA PMU
9.38	PoCRA digital platform	Create	Reports based on ad-hoc query	PoCRA digital platform should be able to create downloadable reports based on ad-hoc queries

## 5. Monitoring of audit and audit compliance

Sr. No.	User	Action	Object	Functional Description
9.39	Users such as AA, CA, VCRMC member, DDO, DSAO, SDAO and PoCRA PMU authorised personnel	Input	Audit and audit compliance reports	Users such as AA, CA, VCRMC member, DDO, DSAO, SDAO and PoCRA PMU authorised personnel should be able to input relevant sections of audit reports of both internal and CAG audits and audit compliance reports as prescribed in format in annexure 11.1 of financial management manual Part A and B.
9.40	Users such as AA, CA, VCRMC member, DDO, DSAO, SDAO and PoCRA PMU authorised personnel	Upload	Audit and audit compliance reports	Users such as AA, CA, VCRMC member, DDO, DSAO, SDAO and PoCRA PMU authorised personnel should be able to upload relevant documents of both internal and CAG audits and audit compliance reports

## 10 Non – functional requirements

For solution designing and requirements, the non-functional requirements (NFR) for PoCRA specifies criteria that will be used to support the operation of the application. Following are the non-functional requirements:

- 10.1. The data Integration requirements for the system have been listed below.
  - 10.1.1. System should have appropriately configured software/s to enable data extraction, transformation and other data integration tasks
  - 10.1.2. System should be able to extract data from a variety of databases and other file formats such as excel, xml, csv etc.
- 10.2. The text search and processing requirements for the system have been listed below.
- 10.3. System should enable the extraction of data from unstructured text through user defined rules, search and reporting functions as per user-definitions, taxonomies and confidence levels
- 10.4. System should be able to create a repository of data from various data sources
- 10.5. Data Profiling and quality: The system shall have the capability to identify, resolve, correct mistakes and inconsistencies, data profiling and data standardisation.
- 10.6. System should have appropriate data warehouse and storage requirements
- 10.7. Following are the non-functional requirements for profile creation for users in the system
  - 10.7.1. Users such as prospective, active, content provider or PoCRA staff users would have authorised profiles.
  - 10.7.2. All farmers would have access to the data, information and tools on web portal and mobile application to an extent as defined by PoCRA PMU. This is specific to the users who do not create a profile on the PoCRA digital platform and use the content and information on the portal.
- 10.8. The system should have the capability to create, manage and publish reports in all formats
- 10.9. Following are the non-functional requirements for system analytics.
  - 10.9.1. System should be able to provide time series analysis for trends and forecasting, with appropriate base forecasts and user-driven overrides
  - 10.9.2. The system should be able to present the analysis in an easy to use graphical interface that incorporates dashboards, drill-downs, alerts and triggers and reports exportable to a variety of formats
  - 10.9.3. The system should be able to provide the capability to develop the data mining models and forecasts as described in the FRS for various applications
  - 10.9.4. The system should be able to provide an easy interface to include the results of the analytical models into various reports, dashboards and analysis.
  - 10.9.5. The system should be able to provide easy access to relevant analytical model output and scores for creation of various ad-hoc reports as per user requirement
  - 10.9.6. The system should be able to provide functionality for end-user analytics and reporting that is easy to use, navigate and interact with, for all the different categories of users
- 10.10. User access and security requirements of the system have been mentioned below
  - 10.10.1. Users will be provided access to the solution based on authentication using their respective user ids and passwords
  - 10.10.2. User Roles and access control definition should be clearly defined as per the logic provided by the PoCRA PMU. Role-wise system functions and system access rights should be defined

- 10.11. User training requirements of the system have been mentioned below
  - 10.11.1. Users should be able to use the digital solution based on specific training videos and use of reference materials
- 10.12. The system should be able to allow high-performance movement and transformation of data between various systems in batch mode. The system shall be able to perform parallel execution of jobs.
- 10.13. System should be able to maintain audit-trail of each activity including log-in, query etc. System should promote readable and maintainable code
- 10.14. The system should be able to demonstrate the ability to comply with back-up requirements such as back up of database, external and internal flat files, meta-data with source codes and end users data/reports which should be saved in a central repository by users
- 10.15. The system should be able to fulfil data archiving requirements of the system including archival of large volumes of data for a period as recommended by the PoCRA PMU

## 11. Annexures



## 11.1. Project indicators and their narration

Indicator No.	Indicator name	Description
<b>Project Development Objectives (PDO) indicators</b>		
1	Climate resilient agriculture: Increase in water productivity at farm level	<p>This indicator measures the annual increase in water productivity at sub district level (taluka); it is expressed as a ratio of agricultural production (in kg) over evapotranspiration (in m<sup>3</sup>). It is measured from Year 3 onwards and for kharif season only. It is expressed as percentage change relative to a baseline value of 0.23 kg per cubic meter.</p> <p>Agricultural production data refers to the crop production output and is compiled from the yields for the main kharif crops: cotton, soybean, pigeon pea, green gram, and black gram. The yield data can be sourced from production estimates for the selected crops through the crop cut method on beneficiaries' fields. Evapotranspiration (ET) is used as a proxy for consumptive water use. ET data can be estimated at taluka level for the cropping period chosen using the water balance and/or the energy balance tools developed for the project. All the data is collected and generated by the project's M&amp;E firm and shared with the PMU's M&amp;E specialist.</p>
2	Climate resilient agriculture: Improved yield uniformity and stability	<p>This indicator measures the Coefficient of Variation (CV) for yields of soybean (for oilseeds) and pigeon pea (for pulses) over time (temporal variability: CV-T) and across project districts (spatial variability: CV-S).</p> <p>The CV for crop yields indicates the variability – and hence the climate vulnerability – of farmers growing that particular crop. The lower the CV, the lower is the yield variability and climate vulnerability. Project interventions are expected to bring down the yield variability, thus giving stability in the crop production and hence reducing climate vulnerability. CV is defined as standard deviation divided by mean. In addition to the baseline values generated, CV-S is reported at project mid-term and at the end of project implementation, while CV-T is reported at the end of the project implementation only. The yield data is sourced from field surveys designed and carried out by the M&amp;E firm and can be vetted against the official agriculture statistics at taluka level.</p>
3	Net greenhouse gas emissions	<p>This indicator reports on the GHG emissions reduced as a result of climate-resilient agricultural technologies and agronomic practices introduced by the project. Project net greenhouse gas (GHG) emissions are calculated using as an annual average of the difference between project gross (absolute) emissions aggregated over the economic lifetime of the project and the emissions of a baseline (counterfactual) scenario aggregated over the same time horizon. The indicator value is negative if the project is reducing emissions, and positive if the project is increasing emissions. The indicator is based on an ex-ante estimation using GHG accounting</p>

Indicator No.	Indicator name	Description
		methodologies acceptable to the Bank (e.g. FAO's EX-ACT tool). GHG accounting is only done ex-ante. If the project undergoes major restructuring or is subject to additional financing relevant to GHG accounting, the ex-ante estimation of project net emissions needs to be recalculated at the time of restructuring or processing additional financing.
4	Farm income (ratio of farm income for women-headed HH with/without PoCRA)	<p>This indicator tracks the annual farm income of project beneficiaries. It measures how the income of landholders evolves with project activities, compared to the income of landholders that do not benefit from project interventions.</p> <p>The indicator is reported for the total sample surveyed (T), for male landholders only (M) and for female landholders only (F). The indicator is reported at mid-term and at the end of the project implementation. A ratio of 1.20 means that the average income of project beneficiaries is 20% higher than that of comparable landholders outside of the project area. The official definition of farm income applies for this indicator. The data is sourced from field surveys designed and carried out by the M&amp;E firm and can be vetted against the official agriculture income statistics available</p>
5	Farmers reached with agricultural assets or services	<p>This indicator measures the number of farmers who were provided with agricultural assets or services as a result of project support. Assets include all goods and works related to agriculture technology and agronomic practices as well as farm machinery, processing equipment and infrastructure. Services include research, extension, training, ICTs, inputs (e.g., fertilizers, pesticides, labor), production-related services (e.g. soil &amp; water testing, animal health/veterinary services), phyto-sanitary and food safety services, agricultural marketing support services (e.g. price monitoring, export promotion), access to farm and post-harvest machinery and storage facilities, irrigation and drainage, and finance. This indicator is reported on semi-annual basis; it is expressed in absolute number (cumulative) of total beneficiaries and as a percentage of that total number for the share of female reached. The information for this indicator is sourced from the project MIS and is based on the data entered by the Cluster Assistant.</p>
<b>Intermediate indicators</b>		
6	Farmers adopting improved agricultural technology	<p>This indicator measures the number of farmers who have adopted an improved agricultural technology promoted by activities supported by the project. Adoption refers to a change of practice or change in use of a technology that was introduced or promoted by the project. Technology includes a change in practices compared to currently used practices or technologies (seed preparation, planting time, feeding schedule, feeding ingredients, postharvest storage/processing, etc.). If the project introduces or promotes a technology package in which the benefit depends on the application of the entire package (e.g., a combination of inputs such as a new variety and</p>

Indicator No.	Indicator name	Description
		advice on agronomic practices such as soil preparation, changes in seeding time, fertilizer schedule, plant protection, etc.), this counts as one technology. This indicator is reported on semi-annual basis; it is expressed in absolute number (cumulative) of total adopters and as a percentage of that total number for the share of female reached. The information for this indicator is sourced from the project MIS and is based on the data entered by the Cluster Assistant.
7	Area provided with new/improved irrigation or drainage services	This indicator measures in ha the total area of land provided by the project with new or improved irrigation or drainage services. This indicator includes: the area provided with new irrigation or drainage services (ha); and the area provided with improved irrigation or drainage services (ha). Irrigation or drainage services refers to the better delivery of water to, and drainage of water from, arable land, including better timing, quantity, quality, and cost-effectiveness for the water users. New irrigation or drainage services refers to the provision of irrigation and drainage services in an area that has not had these services before. The area is not necessarily newly cropped or newly productive land, but is newly provided with irrigation and drainage services, and may have been rain-fed land before. Improved irrigation or drainage services refers to the upgrading, rehabilitation, and/or modernization of irrigation or drainage services in an area with existing irrigation and drainage services. This indicator is reported in ha (cumulative) on annual basis. The information for this indicator is sourced from the project MIS based on the basis of data entered by the Cluster Assistant.
8	Climate resilient agriculture: Improved availability of surface water for agriculture (from new farm ponds)	This indicator measures the surface water storage capacity created with to project supported farm and community ponds.  Typically, a farm pond of size 30*30*3m has the capacity to store some 1,970 m3 as per PDKV observations. The indicator is reported in 1,000 m3 on a semi-annual basis (cumulative). The information for this indicator is sourced from the project MIS based on the data collected and entered by the Cluster Assistant who is responsible for local monitoring of the works.
9	Climate resilient agriculture: Area with GAPs for improved management of saline and sodic soils (enhanced soil health)	This indicator tracks the farm production area in ha where Good Agricultural Practices (GAP) are applied by farmers for improving management of saline and sodic soils in project villages.  There are 932 project villages in the saline tract of the Purna river basin. Project interventions include subsurface soil drainage, application of soil amendments/ameliorates, improved agronomic practices, farm ponds, water lifting devices and micro irrigation systems. This indicator is reported in ha on an semi-annual basis (cumulative). The information for this indicator is sourced from the project MIS based on data collected and entered by the Cluster Assistant.

Indicator No.	Indicator name	Description
10	Share of crop production area (pulses and oilseeds) under cultivation with climate-resilient varieties	<p>This indicator measures the share of production area in the project with oilseeds and pulses, that is cultivated using certified seeds of improved varieties.</p> <p>The project promotes the use of certified seeds of climate resilient varieties. This indicator tracks the progress made on the use of these climate-resilient varieties, specifically for soybean (oilseeds), and pigeon pea and chick pea (pulses). This indicator is reported in percentage of the total area grown for these 3 crops. An indicator of 50% means that in the project villages, half of the farm area grown with soybean, chickpea and pigeon pea, is cultivated with certified seeds of stress-tolerant varieties. This indicator is reported in percentage on an annual basis. The information for this indicator is sourced from the project MIS based on the data entered by the Cluster Assistant who is responsible for the primary data collection on the sale of certified seeds reported by input dealers.</p>
11	Project-supported Farmer Producer Companies with growth in annual profits	<p>This indicator reports the number of project-supported Farmer Producer Companies with growth in annual profit.</p> <p>This indicator reports on the growth and sustainability of FPCs that receive project support. This indicator is reported as an absolute number (cumulative) on an annual basis. The data is collected by the M&amp;E firm through the FPC survey designed and implemented and validated against the annual audited statements of project supported FPCs.</p>
12	Strategic Research and Extension Programs (SREP) with internalized climate resilience agenda	<p>This indicator reports on the number of district-level, multi-year, Strategic Research and Extension Plan (SREP) that have mainstreamed climate-resilience.</p> <p>All 15 project districts have DPMU technically supported by KVKs and SAUs. The project supports the review and update of the current SREPs with the aim to mainstream climate vulnerability and its impact on farming in that district. This indicator is reported as an absolute number (cumulative) for year 2 and year 3 of project implementation. Revised, validated SREPs are sent by PD ATMA to PMU where the information is recorded by the M&amp;E Specialist.</p>
13	Clients receiving services from the MH Climate Innovation Center	<p>This indicator tracks the number of clients (Farmer Producer Organizations, SMEs, ...) that receive services from the CIC.</p> <p>The CIC established by the project provides a broad range of services (e.g. business development, coaching, incubation, etc.) to growth-oriented private sector companies seeking to scale up their climate solutions in the project area and beyond. This indicator is reported as an absolute number (cumulative) from year 4 onwards. The information is sourced from the annual reports prepared by the CICs and submitted to the PMU where it is recorded by the M&amp;E specialist.</p>

Indicator No.	Indicator name	Description
14	Beneficiary participation and civic engagement: approved participatory mini watershed plans implemented or under implementation	<p>Number of approved participatory mini watershed plans implemented / under implementation</p> <p>Participatory planning of mini watershed-based clusters includes active involvement of farmers, village functionaries, local representatives and other community stakeholders who contribute to the actionable plan. This indicator is monitored on a semi-annual basis (cumulative). It is reported as an absolute number of participatory mini watershed plans approved by Gramsabha. The information is collected by the microplanning agencies from the offices of the SDAOs. The microplanning agencies submit the validated mini-watershed plans to the PMU where the data is recorded by the M&amp;E specialist</p>

## 11.2. Component, subcomponent and activity wise mapping of indicators

No.	Component	No.	Subcomponents	No.	Activities	PDO	Intermediate
<b>A. Promoting Climate-Resilient Agricultural Systems</b>							
A1	Participatory development of mini watershed plans						14
A2	Climate smart agriculture and resilient farming systems	1	Demonstration of climate smart agronomic practices(CS AP)	a	Farmer Field Schools (FFS) for Technology Dissemination /c	1,2,3,4	6
					FFS - First Year	1,2,3,4	6
					FFS - Second Year	1,2,3,4	6
					FFS - Third Year	1,2,3,4	6
		2	Enhancement in Carbon Sequestration	a	Agro-forestry - farm periphery /small block of 100 plants	1,2,3,4	6
				b	Plantation - Mango (5x5) - First year	1,2,3,4	6
				c	Plantation - Mango (5x5) - Second Year	1,2,3,4	6
				d	Plantation - Mango (5x5) - Third Year	1,2,3,4	6
				e	Plantation - Citrus - First Year	1,2,3,4	6
				f	Plantation - Citrus - Second Year	1,2,3,4	6
				g	Plantation - Citrus - Third Year	1,2,3,4	6
				h	Plantation - Custard Apple/Guava/Amla - First Year	1,2,3,4	6
				i	Plantation - Custard Apple/Guava/Amla - Second Year	1,2,3,4	6
				j	Plantation - Custard Apple/Guava/Amla - Third Year	1,2,3,4	6
				k	Plantation - Pomegranate - First Year	1,2,3,4	6
				l	Plantation - Pomegranate - Second Year	1,2,3,4	6

No.	Component	No.	Subcomponents	No.	Activities	PDO	Intermediate
				m	Plantation - Pomegranate - Third Year	1,2,3,4	6
		3	Improvement of saline and sodic lands	a	Improvement through sub surface drainage	1,2,4	6,9
				b	Demonstration of Technology for salinity management thru FFS	1,2,3,4	6,9
				c	Farm pond with inlet & outlet and grass cultivation	1,2,4	6,9
				d	Water pumps	1,2,4	6,9
				e	Water sprinkler	1,2,4	6,9
		4	Protected Cultivation	a	Shadenet house (GI/MS pipes)	1,2,3,4	6
				b	Shed net house - Bamboo	1,2,3,4	6
				c	Polyhouse (open vent)	1,2,3,4	6
				d	Poly tunnels	1,2,3,4	6
				e	Planting material Polyhouse/ shadenet house	1,2,3,4	6
				f	Planting material in polytunnels	1,2,3,4	6
		5	Soil Health Improvement	a	Vermi compost and NADEP units	1,2,4	6
				b	Organic input production unit	1,2,4,5	6
A3	Efficient and sustainable use of water for agriculture					1,3,5	7
			Catchment treatment	a	Continuous Contour trenches Model 5	1,3,5	7
				b	Continuous Contour trenches Model 6	1,3,5	7
				c	Deep Continuous Contour Trenches	1,3,5	7
		2	Drainage Line Treatment	a	Construction of Loose bolder Structures	1,3,5	7
				b	Construction of Earthen Nala Bunds	1,3,5	7

No.	Component	No.	Subcomponents	No.	Activities	PDO	Intermediate
				c	Construction of Cement Nala Bunds	1,3,5	7
		3	Construction of new water harvesting structures	a	Construction of community farm ponds	1,3,5	7,8
				b	Construction of Farm Ponds (without lining)	1,3,5	7,8
				c	Construction of Farm ponds (with lining)	1,3,5	7,8
				d	Open Dug well	1,3,5	7,8
		4	Rejuvenation by desilting/repairs of old water harvesting structures	a	Desilting of old water storage structure	1,3,5	7,8
		5	Construction of groundwater recharge structures	a	Open dug wells/bore wells	1,3,5	7,8
		6	On-farm water security	a	Compartment /graded bunding	1,3,5	7,8
		7	Micro irrigation systems	a	Drip irrigation systems	1,3,5	7,8
				b	Sprinklers	1,3,5	7,8
		8	Protective Irrigation	a	water pumps	1,3,5	7,8
				b	Water carrying pipes	1,3,5	7,8
<b>B. Climate-resilient Post-harvest Management and Value Chain Promotion</b>							
B1	Promoting Farmer Producer companies		Support to existing FIGs/FPOs/FPCs /a	a	Preparation of Development Plan of FIGs/FPOs/FPCs	2,4,5	11,
				b	Strengthening of existing FIGs/FPOs/FPCs	2,4,5	11,
				c	Developing market linkages	2,4,5	11,
		2	Establishment of Custom Hiring Centres /c			2,4,5	11,



No.	Component	No.	Subcomponents	No.	Activities	PDO	Intermediate
B2	Strengthening Emerging Value-chains for Climate-resilient Commodities		Support to FIGs/FPOs/ FPCs for product aggregation, handling, transformation & marketing /d			2,4,5	11,
B3	Improving the Performance of the Seed Supply Chain		Production of foundation & certified seed of climate resilient varieties			2,4,5	10
			Development of seed hub-infrastructure support	a	Seed processing equipments for 1000 MT capacity	2,4,5	11
				b	Seed processing shed/ drying yard for 1000 MT capacity	2,4,5	11
				c	Seed storage/ godown of 700 sqm (Capacity 1000 MT)	2,4,5	11
				d	Training of seed producer farmers	2,4,5	11
				e	Strengthening of seed quality testing facility	2,4,5	11
<b>C. Institutional Development, Knowledge and Policies for Climate-resilient Agriculture</b>							
C1	Updation of SREPs aligned to Climate Resilient Agriculture					5	12
C2	Agro-met advisory services					5	
C3	Preparation & Updation of contingency plans					5	
C4	Preparation of Long term climate change models					5	
C5	Risk Analysis Framework					5	

No.	Component	No.	Subcomponents	No.	Activities	PDO	Intermediate
C6	Maharashtra Climate Innovation Centre /a					5	13
C7	Analytical studies pertaining to climate resilience /b					5	
C8	Agricultural Innovations - demonstrations/testing/consolidation /c					5	
C9	Strategic Partnership with other institutes					5	
C10	Capacity Development		Training Need Analysis (TNA), training, designing and module preparation /d			5	
			Training			5	
				<b>a</b>	<b>Project Officials</b>	5	
					PMU officials - International training/workshops	5	
					PMU officials - training within country	5	
					Division/District/sub division/taluka officers training	5	
					Cluster assistant (induction training)	5	
					Cluster assistant (technical training)	5	
					Account office personnel	5	
					Account officials	5	
					Other stakeholders	5	
				<b>b</b>	<b>Farmers' friends &amp; VCRM</b>	5	

No.	Component	No.	Subcomponents	No.	Activities	PDO	Intermediate
					Within district training/workshop/seminars	5	
					Within state training/workshops and seminars	5	
					Interstate training /workshop/seminars	5	
					VCRAMC members	5	
				<b>c</b>	<b>Farmers Training</b>	5	
					Project beneficiaries - Technology dissemination	5	
					Project beneficiaries - skill imparting	5	
				<b>d</b>	<b>Exposure visits</b>	5	
					PMU - International exposure visits	5	
					PMU - Within country	5	
					Division/District/Sub div - within country	5	
					Taluk/cluster - within country	5	
					Farmer friends - within district	5	
					Farmer friends - within state	5	
					Farmer friends - Interstate	5	
C11	Information, Education and Communication (IEC)					5	

## **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 bidding 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 bidding documents.
- (vii) “Implementation Schedule” means the Implementation Schedule in Section VII of the bidding 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) “bidding documents” refers to the collection of documents issued by the Purchaser to instruct and



inform potential suppliers of the processes for bidding, selection of the winning bid, and Contract formation, as well as the contractual conditions governing the relationship between the Purchaser and the Supplier. The General and Special Conditions of Contract, the Technical Requirements, and all other documents included in the bidding documents reflect the Procurement Regulations that the Purchaser is obligated to follow during procurement and administration of this Contract.

(b) Entities

- (i) “Purchaser” means the entity purchasing the Information System, as **specified in the SCC**.
- (ii) “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.
- (iii) “Supplier” means the firm or Joint Venture whose bid to perform the Contract has been accepted by the Purchaser and is named as such in the Contract Agreement.
- (iv) “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.
- (v) “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.
- (vi) “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).
- (vii) “The World Bank” (also called “The Bank”) means the International Bank for Reconstruction and

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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 bid. 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.

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- (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).

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- 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 these bidding documents (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

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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 Electronic Data Interchange (EDI), 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

5.3 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 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 bidding 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.

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## 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 bid, 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.

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- 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 bid 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 and Subcontractor'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 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.
- 9.7 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).

9.8 Pursuant to paragraph 2.2 e. of Appendix B to the General Conditions the Supplier shall permit and shall cause its subcontractors and subconsultants to permit, the Bank and/or persons appointed by the Bank to inspect the Site and/or the accounts and records relating to the procurement process, selection and/or contract execution, and to have such accounts and records audited by auditors appointed by the Bank if requested by the Bank. The Supplier's and its Subcontractors' and subconsultants' attention is drawn to Sub-Clause 6.1 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).

9.9 The Supplier shall conform to the sustainable procurement contractual provisions, if and as **specified in the SCC**.

9.10 **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 personnel of the Supplier or Subcontractors, 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.

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## 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.

## 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 bidding documents 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 bidding documents, 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**



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**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 bid 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.
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## D. INTELLECTUAL PROPERTY

As per the government of India guidelines and directives under NeGP, the PoCRA department will have the complete / sole ownership of the following, during the entire contractual period and after:

- The proposed PoCRA application/ solution, including its source code, process documentation, system flow diagrams and any relevant IT information designed, used or developed during the contract period will completely be owned by PoCRA will remain exclusively with PoCRA only. The source code of the customized portion alone may be supplied.
- All types of Licenses. It is a mandatory requirement that any licenses needed for successful design, development, implementation and operations of the PoCRA application must be perpetual licenses and procured in the name of the government / PoCRA, all the license cost will be borne by the Supplier during the project  
Intellectual Property Rights.
- All types of Licenses. It is a mandatory requirement that any licenses needed for successful design, development, implementation and operations of the PoCRA application must be perpetual licenses and procured in the name of the government / PoCRA.
- At no point during the entire contract duration and after, the Supplier shall claim right on any 'Intellectual Property'. Also, since the department will hold the complete rights of the IPRs, the Supplier must not use any of the IPRs in any of the projects other than that of PoCRA automation project, without written approval from the department.
- In case the Supplier wishes to utilize the domain knowledge, solution design, expertise, software application, etc. anywhere else, they will have to pay "Royalty" to the department. The terms & conditions of the "Royalty" as well as the percentage in financial terms would be at the sole discretion of the department. Any deviation from the above will attract financial penalty as well as legal action, as deemed necessary.

### 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 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 bid), 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 bid 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, (and the Purchaser may sublicense such persons to use and copy for use the Software) 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.

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.

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## 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 its personnel and any subcontracted 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 Objections and Removals

18.3.1 The Purchaser may by notice to the Supplier object to any representative or person employed by the Supplier in the execution of the Contract who, in the reasonable opinion of the Purchaser, may have behaved inappropriately, be incompetent, or be negligent. The Purchaser shall provide evidence of the same, whereupon the Supplier shall remove such person from work on the System.

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 replacement.

## 19. Project Plan

19.1 In close cooperation with the Purchaser and based on the Preliminary Project Plan included in the Supplier's bid, 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. 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) 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**.

**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. The Purchaser shall not withhold such approval unreasonably. Such 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; 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.

**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 bid 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.

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- 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 bid 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 bid.
- 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 Bid) 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 bidding documents, 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 bid, 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 licensors 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 Bid; 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.

## **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) 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 contractor 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



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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.

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## 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 bidding documents.

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.

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

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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

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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 43 (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 and its Subcontractors' 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 and its Subcontractors' 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 to the GCC, in competing for or in executing the Contract, including



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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 fourteen (14) 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;

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- (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 and its Subcontractor'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.

**44. Handing over equipment for executing contract**

Where the Purchaser hands over his equipment to the Supplier for executing the Contract, then the Supplier shall, at the time of taking delivery of the equipment through any dispatch documents, furnish trust Receipt for Information Systems and associated goods and also execute an Indemnity Bond in favor of the Purchaser in the form acceptable to the Purchaser for keeping the equipment in safe custody and to utilize the same exclusively for the purpose of the said Contract. The Purchaser shall also issue a separate Authorization Letter to the Supplier to enable him to take physical delivery of equipment and materials from the Purchaser.

## **APPENDIX**

### **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

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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.



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>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.



## 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

#### 1. Definitions (GCC Clause 1)

GCC 1.1 (a) (ix)	The applicable edition of the Procurement Regulation is dated: July 2016 revised November 2017. August 2018
GCC 1.1 (b) (i)	The Purchaser is: <i>Project on climate resilient agriculture (PoCRA), Department of Agriculture, Government of Maharashtra</i>
GCC 1.1 (b) (ii)	The Project Manager is: <i>Project Director, Project on climate resilient agriculture (PoCRA),, Department of Agriculture, Government of Maharashtra</i>
GCC 1.1 (e) (i)	The Purchaser's Country is: India.
GCC 1.1 (e) (iii)	The Project Site(s) is: <i>Project on climate resilient agriculture (PoCRA), B-30, Arcade, World Trade Centre, Cuff Parade, Mumbai 400 005</i>
GCC 1.1 (e) (xiii)	The Post-Warranty Services Period is 60 months starting with the completion of the Warranty Period.

#### 2. Notices (GCC Clause 4)

GCC 4.3	Address of the Project Manager: <i>Project on climate resilient agriculture (PoCRA), B-30, Arcade, World Trade Centre, Cuff Parade, Mumbai 400 005 and Email id is: <a href="mailto:procurment.pmu@mahapocra.gov.in">procurment.pmu@mahapocra.gov.in</a></i>
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### B. SUBJECT MATTER OF CONTRACT

#### 3. Scope of the System (GCC Clause 7)

GCC 7.3	The Supplier's obligations under the Contract will include the recurrent cost items, as identified in the Recurrent Cost tables in the Supplier's Bid: Nil
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#### 4. Time for Commencement and Operational Acceptance (GCC Clause 8)

GCC 8.1	The Supplier shall commence work on the System within 14 days from the Effective Date of the Contract.
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GCC 8.2	Operational Acceptance shall be achieved by the Supplier as per time schedule given in Section VII (Scope of Work) under the heading “Implementation Schedule” i.e. 38 weeks from the date of award of Contract.
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### 5. Supplier’s Responsibilities (GCC Clause 9)

GCC 9.1	<i>“The employees of the Supplier and the Sub-Contractors in no case shall be treated as the employees of the Purchaser at any point of time.”</i>
GCC 9.5	Add the following at the end of GCC Clause 9.5:  “Salient features of major labour and other laws that are applicable to manufacturing, installation and other construction industry in India are given as Annexure 1 to these General Conditions of Contract.”
<b>6. Purchaser’s Responsibilities (GCC Clause 10)</b>	
GCC 10.12	None

## C. PAYMENT

### 7. Contract Price (GCC Clause 11)

GCC 11.2	Adjustments to the Contract Price shall be as follows: <i>not applicable</i>
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### 8. Terms of Payment (GCC Clause 12)

GCC 12.1	<p>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. Only the categories Advance Payment and Complete System Integration relate to the entire Contract Price. In other payment categories, the term "Total Contract Value" means the total cost of goods or services under the specific payment category. Within each such category, the Contract Implementation Schedule may trigger pro-rata payments for the portion of the total Contract Value for the category corresponding to the goods or services actually Delivered, Installed, or Operationally Accepted, at unit prices and in the currencies specified in the Price Schedules of the Contract Agreement.</p> <p>Total Contract Value (TCV) =C1+C2+C3+C4.</p> <p>where</p> <p>C1=Development, Implementation and Configuration of Digital platform and PoCRA applications C2=Installation and Maintenance of IoT cost C3=Satellite Image cost C4=Cloud Cost</p> <p>as per prices given in the Supplier’s Price Schedule/Revised Price Schedule incorporated in Appendix 6 to the Contract..</p>
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	<p><b>Payment stages: -</b></p> <p><b>Payment Terms for C1:</b></p> <ul style="list-style-type: none"> <li>• Five percent (5%) of the Total Value of C1 shall be paid after submission of inception report and project plan</li> <li>• Five percent (5%) of the Total Value of C1 shall be paid after accepting SRS document of Applications B</li> <li>• Fifteen percent (15%) of the Total Value of C1 shall be paid after accepting UAT of Applications A</li> <li>• Fifteen percent (15%) of the Total Value of C1 shall be paid after accepting UAT of Applications B</li> <li>• Sixty percent (60%) of the Total Value of C1 shall be paid in 20 equal quarters at the rate of 3% per QGR</li> </ul> <p><b>Payment Terms for C2:</b></p> <ul style="list-style-type: none"> <li>• 60% of payment of total C2 value will be paid on successful implementation of IoT units on the field.</li> <li>• 40% of the total C2 value will be paid in 20 QGR (at the rate of 2% per quarter)</li> </ul> <p><b>Payment Terms for C3:</b></p> <ul style="list-style-type: none"> <li>• Payment for the satellite image will be paid on quarterly basis after operational acceptance in Four Quarters at the rate of 25% per quarters</li> </ul> <p><b>Payment Terms for C4:</b></p> <ul style="list-style-type: none"> <li>• Cloud Cost will be reimbursed on quarterly basis after operational acceptance on submission of detailed utilisation report from Cloud Service providers and supporting documents</li> </ul>
GCC 12.3	<p>The Purchaser shall pay to the Supplier interest on the delayed payments at a rate of:</p> <p>In case of payments in Indian Rs., the interest rate that shall be applied is 8%. Per annum</p> <p>In case of payments in foreign currency, the interest rate that shall be applied is LIBOR rate +2% p.a.</p>
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, and the conversion between this currency and Indian Rs. for payment purposes - in case the two currencies are different - will be made as of the actual payment date using the BC selling market exchange rates established by the State Bank of India.</p>

## 9. Securities (GCC Clause 13)

GCC 13.2.2	<p>The reduction in value and expiration of the Advance Payment Security are calculated as follows: <i>Not Applicable</i></p>
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GCC 13.3.1	The Performance Security shall be denominated in the currency or currencies of the contract or in a freely convertible currency acceptable to the Purchaser - for an amount equal to 10 percent of the Total Contract Value.
GCC 13.3.4	During the Warranty Period (i.e., after Operational Acceptance of the System), the Performance Security shall be reduced to 5 percent of the Contract Price, excluding any Recurrent Costs.
<b>10. Taxes and Duties (GCC Clause 14)</b>	
GCC 14.3	Add at the end of GCC 14.3 the following: “This will not apply to deemed export or similar benefits for which the supplier is solely responsible for obtaining such benefits.”
GCC 14.4	Add at the end of GCC 14.4 the following: “However, these adjustments would be restricted to direct transactions between the Purchaser and the Supplier and not on procurement of raw materials, intermediary components etc. by the Supplier. Further, no adjustment of the Contract Price shall be made on account of variation in deemed export or similar benefits”.

## D. INTELLECTUAL PROPERTY

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### 11. Copyright (GCC Clause 15)

GCC 15.3	‘There are no Special Conditions of Contract applicable to GCC Clause 15.3’
GCC 15.4	There are no Special Conditions of Contract applicable to GCC Clause 15.4
GCC 15.5	There are no Special Conditions of Contract applicable to GCC Clause 15.5

### 12. Software License Agreements (GCC Clause 16)

GCC 16.1 (a) (iv)	There are no Special Conditions of Contract applicable to GCC Clause 16.1 (a) (iv)
GCC 16.1 (b) (vi)	There are no Special Conditions of Contract applicable to GCC Clause 16.1 (b) (vi)
GCC 16.1 (b) (vii)	There are no Special Conditions of Contract applicable to GCC Clause 16.1 (b) (vii)
GCC 16.2	There are no Special Conditions of Contract applicable to GCC Clause 16.2

### 13. Confidential Information (GCC Clause 17)

GCC 17.1	There are no Special Conditions of Contract applicable to GCC Clause 17.1
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## E. SUPPLY, INSTALLATION, TESTING, COMMISSIONING, AND ACCEPTANCE OF THE SYSTEM

### 14. Representatives (GCC Clause 18)

GCC 18.1	There are no Special Conditions of Contract applicable to GCC Clause 18.1
GCC 18.2.2	There are no Special Conditions of Contract applicable to GCC Clause 18.2.2

### 15. 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>Project Organization and Management Sub-Plan, including management authorities, responsibilities, and contacts, as well as task, time and resource-bound schedules (in GANTT format);</b></li> <li>(b) <b>Implementation Sub-Plan;</b></li> <li>(c) <b>Training Sub-Plan;</b></li> <li>(d) <b>Testing and Quality Assurance Sub-Plan;</b></li> <li>(e) <b>Warranty Defect Repair and Technical Support Service Sub-Plan;</b></li> <li>(f) <b>Post-Warranty Service Plan (if applicable)</b></li> </ul>
GCC 19.6	<p>The Supplier shall submit to the Purchaser:</p> <ul style="list-style-type: none"> <li>(i) <b>monthly inspection and quality assurance reports</b></li> <li>(ii) <b>monthly training participants test results</b></li> <li>(iii) <b>monthly log of service calls and problem resolutions</b></li> </ul>

### 16. Design and Engineering (GCC Clause 21)

GCC 21.3.1	There are no Special Conditions of Contract applicable to GCC Clause 21.3.1.
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### 17. Procurement, Delivery, and Transport (GCC Clause 22)

GCC 22.4.3	The Supplier shall be free to use transportation through carriers registered in any eligible country and shall obtain insurance from any eligible source country.
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### 18. Product Upgrades (GCC Clause 23)

GCC 23.4	There are no Special Conditions of Contract applicable to GCC Clause 23.4.
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### 19. Inspections and Tests (GCC Clause 25)

GCC 25	There are no Special Conditions of Contract applicable to GCC Clause 25.
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### 20. Commissioning and Operational Acceptance (GCC Clause 27)

GCC 27.2.1	There are no Special Conditions of Contract applicable to GCC Clause 27.2.1.
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## F. GUARANTEES AND LIABILITIES

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### 21. Operational Acceptance Time Guarantee (GCC Clause 28)

GCC 28.2	There are no Special Conditions of Contract applicable to GCC Clause 28.2
GCC 28.3	There are no Special Conditions of Contract applicable to GCC Clause 28.3.

### 22. Defect Liability (GCC Clause 29)

GCC 29.1	There are no Special Conditions of Contract applicable to GCC Clause 29.1.
GCC 29.4	The Warranty Period shall commence from the date of Operational Acceptance of the System
GCC 29.10	GCC 29.10 is supplemented by the following provision.  Clause no.5.2 Page number 172 under Scope of Work of the RFB - stipulates the Service Level Requirements/Agreement (SLA). Liquidated Damages applicable in the event of default in complying with the SLA are specified therein. The Purchaser shall recover or deducted the applicable Liquidated Damages from the Supplier's Bills or the Performance Security, as the case may be

### 23. Functional Guarantees (GCC Clause 30)

GCC 30	There are no Special Conditions of Contract applicable to GCC Clause 30.
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## G. RISK DISTRIBUTION

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### 24. Insurances (GCC Clause 37)

GCC 37.1 (c)	The Supplier shall obtain Third-Party Liability Insurance in the amount of 10% of Total Contract Value. The insured Parties shall be all the Supplier's Personnel,
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	Purchaser's Personnel and all Third parties affected by the Project. The Insurance shall cover the period from date of signing till the completion of the contract.
GCC 37.1 (e)	There are no Special Conditions of Contract applicable to GCC Clause 37.1 (e).
GCC 37.7	<p>Add Clause GCC 37.7 as under:</p> <p><b><i>“Appropriation of Insurance Proceeds</i></b></p> <p>Should any loss or damage occur, the Supplier shall:</p> <ol style="list-style-type: none"> <li>a) initiate and pursue claim till settlement; and</li> <li>b) promptly make arrangements for repair and/or replacement of the damaged or lost item/s and ensure supply/commissioning in terms of the contract, irrespective of settlement of claim by the insurance company.</li> </ol> <p>Keeping in view the above the purchaser shall give, from time to time, written authorization to the insurance company to directly pay monies payable by the insurer to the supplier after excluding any payment including advances already paid by the purchaser in respect of those items, such excluded payments will be payable to the Purchaser only and insurer will accordingly make the payment as advised by the Purchaser from time to time. All subsequent payments, if any, due under the Contract, shall be regulated by the relevant terms of payment.”</p>

## H. CHANGE IN CONTRACT ELEMENTS

### 25. Changes to the System (GCC Clause 39)

GCC 39.4	Value Engineering: Not Applicable
<b>26. Termination</b>	
GCC 41.2.2	Add the following as sub-clause 41.2.2(e) “in case of Joint Venture, has modified the composition of the joint venture and/or the responsibility of each member of the joint venture from what is stated in joint venture agreement without the prior approval of the Purchaser;”

## I. SETTLEMENT OF DISPUTES

### 27. Settlement of Disputes (GCC Clause 43)

GCC 43.1.4	The Appointing Authority for the Adjudicator will be the President of the Institution of Engineers (India)
GCC 43.2.3	<p>The rules of procedure for arbitration proceedings pursuant to GCC Clause 43.2.3 shall be as follows:</p> <p>a) In case of Dispute or difference arising between the Purchaser and a domestic Supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of 3 arbitrators one each to be appointed by the Purchaser and the Supplier. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the President of the Institution of Engineers (India)</p> <p>b) In the case of a dispute with a foreign Supplier, the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules. The Arbitral Tribunal shall consist of three Arbitrators one each to be appointed by the Purchaser and the Supplier. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the parties, and shall act as presiding arbitrator. In case of failure of the two arbitrators appointed by the parties to reach upon a consensus within a period of 30 days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the President of the Institution of Engineers (India)</p> <p>c) If one of the parties fails to appoint its arbitrator in pursuance of sub-clause (a) and (b) above, within 30 days after receipt of the notice of the appointment of its arbitrator by the other party, then the President of the Institution of Engineers (India) both in cases of the Foreign supplier as well as Indian supplier, shall appoint the arbitrator. A certified</p>

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	<p>copy of the order of the President of the Institution of Engineers (India) making such an appointment shall be furnished to each of the parties.</p> <p>d) Where the value of the contract is Rs. 10 million and below, the disputes or differences arising shall be referred to the Sole Arbitrator. The Sole Arbitrator should be appointed by agreement between the parties; failing such agreement, by the appointing authority namely the President of the Institution of Engineers (India)</p>
GCC 44	<p>Insert the following as GCC 44:</p> <p>“Where the Purchaser hands over his equipment to the Supplier for executing the Contract, then the Supplier shall, at the time of taking delivery of the equipment through any dispatch documents, furnish trust Receipt for Information Systems and associated goods and also execute an Indemnity Bond in favour of the Purchaser in the form acceptable to the Purchaser for keeping the equipment in safe custody and to utilize the same exclusively for the purpose of the said Contract. (Samples of proforma for the Trust receipt and Indemnity Bond are enclosed under Section X: Contract Forms. The Purchaser shall also issue a separate Authorization Letter to the Supplier to enable him to take physical delivery of plant, equipment and materials from the Purchaser as per proforma enclosed under Section VIII (Bidding and Contract Forms and Procedures).)”</p>

## Annexure 1

### Salient Features of Labour & Environment Protection Laws<sup>18</sup>

#### SALIENT FEATURES OF SOME MAJOR LABOUR LAWS APPLICABLE TO ESTABLISHMENTS ENGAGED IN MANUFACTURE, INSTALLATION AND OTHER CONSTRUCTION WORK

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| <p>(a) <u>Employees Compensation Act 1923</u>: The Act provides for compensation in case of injury, disease or death arising out of and during the course of employment.</p> <p>(b) <u>Payment of Gratuity Act 1972</u>: gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees.</p> <p>(c) <u>Employees P.F. and Miscellaneous Provision Act 1952 (since amended)</u>: The Act provides for monthly contribution by the employer plus workers @ 10% or 8.33%. The benefits payable under the Act are:</p> <ul style="list-style-type: none"> <li>(i) Pension or family pension on retirement or death, as the case may be.</li> <li>(ii) Deposit linked insurance on the death in harness of the worker.</li> <li>(iii) Payment of P.F. accumulation on retirement/death etc.</li> </ul> <p>(d) <u>Maternity Benefit Act 1961</u>: The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc.</p> <p>(e) <u>Sexual Harassment of Women at the Workplace (Prevention, Prohibition and Redressal) Act, 2013</u>: This Act defines sexual harassment in the workplace, provides for an enquiry procedure in case of complaints and mandates the setting up of an Internal Complaints Committee or a Local Complaints Committee</p> <p>(f) <u>Contract Labour (Regulation &amp; Abolition) Act 1970</u>: The Act provides for certain welfare measures to be provided by the Contractor to contract labour and in case the Contractor fails to provide, the same are required to be provided, by the Principal Employer by law. The Principal Employer is required to take Certificate of Registration and the Contractor is required to take license from the designated Officer. The Act is applicable to the establishments or Contractor of Principal Employer if they employ 20 or more contract labour.</p> <p>(g) <u>Minimum Wages Act 1948</u>: The Employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employments.</p> |
|--|

<sup>18</sup> This list is only illustrative and not exhaustive. Bidders and Contractors are responsible for checking the correctness and completeness of the list. The law as current on the date of bid opening will apply.

- (h) Payment of Wages Act 1936: It lays down the mode, manner and by what date the wages are to be paid, what deductions can be made from the wages of the workers.
- (i) Equal Remuneration Act 1976: The Act provides for payment of equal wages for work of equal nature to male and female workers and for not making discrimination against Female employees in the matters of transfers, training and promotions etc.
- (j) Payment of Bonus Act 1965: The Act is applicable to all establishments employing 20 or more employees. Some of the State Governments have reduced this requirement from 20 to 10. The Act provides for payments of annual bonus subject to a minimum of 8.33% of the wages drawn in the relevant year. It applies to skilled or unskilled manual, supervisory, managerial, administrative, technical or clerical work for hire or reward to employees who draw a salary of Rs. 10,000/- per month or less. To be eligible for bonus, the employee should have worked in the establishment for not less than 30 working days in the relevant year. The Act does not apply to certain establishments.
- (k) Industrial Disputes Act 1947: the Act lays down the machinery and procedure for resolution of Industrial disputes, in what situations, a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment.
- (l) Trade Unions Act 1926: The Act lays down the procedure for registration of trade unions of workmen and employers. The Trade Unions registered under the Act have been given certain immunities from civil and criminal liabilities.
- (m) Child Labour (Prohibition & Regulation) Act 1986: The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of Child Labour is prohibited in the Building and Construction Industry.
- (n) Inter-State Migrant workmen's (Regulation of Employment & Conditions of Service) Act 1979: The Act is applicable to an establishment which employs 5 or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The Inter-State migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home upto the establishment and back, etc.
- (o) The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act 1996 and the Building and Other Construction Workers Welfare Cess Act, 1996 (BOCWW Cess Act): All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under these Acts. All such establishments are required to pay cess at the rate not exceeding 2% of the cost of construction as may be notified by the Government. The Employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as Canteens, First – Aid facilities, Ambulance, Housing accommodations for workers near the work place etc. The Employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.
- (p) Factories Act 1948: the Act lays down the procedure for approval of plans before setting up a factory engaged in manufacturing processes, health and safety provisions, welfare provisions, working hours, annual earned leave and rendering information regarding accidents or dangerous

occurrences to designated authorities. It is applicable to premises employing 10 persons or more with aid of power or 20 or more persons without the aid of power.

- (q) Weekly Holidays Act -1942
- (r) Bonded Labour System (Abolition) Act, 1976: The Act provides for the abolition of bonded labour system with a view to preventing the economic and physical exploitation of weaker sections of society. Bonded labour covers all forms of forced labour, including that arising out of a loan, debt or advance.
- (s) Employer's Liability Act, 1938: This Act protects workmen who bring suits for damages against employers in case of injuries endured in the course of employment. Such injuries could be on account of negligence on the part of the employer or persons employed by them in maintenance of all machinery, equipment etc. in healthy and sound condition.
- (t) Employees State Insurance Act 1948: The Act provides for certain benefits to insured employees and their families in case of sickness, maternity and disablement arising out of an employment injury. The Act applies to all employees in factories (as defined) or establishments which may be so notified by the appropriate Government. The Act provides for the setting up of an Employees' State Insurance Fund, which is to be administered by the Employees State Insurance Corporation. Contributions to the Fund are paid by the employer and the employee at rates as prescribed by the Central Government. The Act also provides for benefits to dependents of insured persons in case of death as a result of an employment injury.
- (u) The Personal Injuries (Compensation Insurance) Act, 1963: This Act provides for the employer's liability and responsibility to pay compensation to employees where workmen sustain personal injuries in the course of employment.
- (v) Industrial Employment (Standing Order) Act 1946: It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the Employer on matters provided in the Act and get the same certified by the designated Authority.

## SALIENT FEATURES OF SOME OF THE MAJOR LAWS THAT ARE APPLICABLE FOR PROTECTION OF ENVIRONMENT.

1. The Environment (Protection) Act, 1986 and as amended: This provides for the protection and improvement of environment and for matters connected therewith, and the prevention of hazards to human beings, other living creatures, plants and property. 'Environment' includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property.
2. The Forest Conservation Act, 1980, as amended, and Forest (Conservation) Rules, 1981 as amended: These provides for protection of forests by restricting conversion of forested areas into non- forested areas and prevention of deforestation, and stipulates the procedures for cutting any trees that might be required by the applicable rules. Permissions under the Act also stipulates the norms and compliance requirements of the employer and any contractor on behalf of the employer.
3. State Tree Preservation Acts as may be in force: These provide for protection of trees of important species. Contractors will be required to obtain prior permission for full or partial cutting, uprooting, or pruning of any such trees.
4. The Wildlife (Protection) Act, 1972, and as amended: This provides for protection of wildlife through notifying National Parks and Sanctuaries and buffer areas around these zones; and to protect individuals of nationally important species listed in the Annex of the Act.
5. The Biological Diversity Act, 2002: This provides for conservation of biological diversity, sustainable use of components of biological diversity, and fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto.
6. The Public Liability Insurance Act, 1991 as amended and The Public Liability Insurance Rules, 1991 as amended: These provide for public liability insurance for the purpose of providing immediate relief to the persons affected by accident occurring while handling hazardous substances and for matters connected herewith or incidental thereto. Hazardous substance means any substance or preparation which is defined as hazardous substance under the Environment (Protection) Act 1986, and exceeding such quantity as may be specified by notification by the Central Government.
7. The Ancient Monuments and Archaeological Sites and Remains Act, 1958 and the Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act, 2010, the Ancient Monuments and Archaeological Sites and Remains Rules, 1959 amended 2011, the National Monuments Authority Rules, 2011 and the similar State Acts: These provide for conservation of cultural and historical remains found in India. Accordingly, area within the radii of 100m and 300m from the "protected property" are designated as "protected area" and "controlled area" respectively. No development activity (including building, mining, excavating, blasting) is permitted in the "protected area" and development activities likely to damage the protected property is not permitted in the "controlled area" without prior permission of the Archaeological Survey of India (ASI) or the State Departments of Art and Culture or Archaeology as applicable.
8. The Environmental Impact Assessment Notification, 2006 and as amended: This provides for prior environmental clearance for new, modernization and expansion projects listed in Schedule 1 of the Notification. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any environmental management plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.
9. The Water (Prevention and Control of Pollution) Act, 1974 as amended, and the Water (Prevention and Control of Pollution) Rules, 1975 as amended: These provide for the prevention and control of water pollution and the



maintaining and restoring of wholesomeness of water. 'Pollution' means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms. Contractors will need to obtain consent for establishment and consent for operation of any item of work or installation of equipment that generates waste water, and observe the required standards of establishment and operation of these items of work or installations; as well as install and operate all required waste water treatment facilities.

10. The Water (Prevention and Control of Pollution) Cess Act, 1977 and The Water (Prevention and Control of Pollution) Cess Rules, 1978: These provide for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution under the Water (Prevention and Control of Pollution) Act, 1974.
11. The Air (Prevention and Control of Pollution) Act, 1981 as amended, and the Air (Prevention and Control of Pollution) Rules, 1982: These provides for prevention, control and abatement of air pollution. 'Air Pollution' means the presence in the atmosphere of any 'air pollutant', which means any solid, liquid or gaseous substance (including noise) present in the atmosphere in such concentration as may be or tend to be injurious to human beings or other living creatures or plants or property or environment. Contractors will need to obtain consent for establishment and consent for operation of any item of work or installation of equipment that generates air pollution such as batching plants, hot mix plants, power generators, backup power generation, material handling processes, and observe the required standards of establishment and operation of these items of work or installations.
12. Noise Pollution (Control and Regulation) Rules, 2000, and as amended: This provides for standards for noise for day and night for various land uses and specifies special standards in and around sensitive receptors of noise such as schools and hospitals. Contractors will need to ensure compliance to the applicable standards, and install and operate all required noise control devices as may be required for all plants and work processes.
13. Chemical Accidents (Emergency Planning, Preparedness and Response) Rules, 1996: This provides for Requirement of preparation of on-site and off-site Disaster Management Plans for accident-prone areas.
14. The Explosives Act 1884 and the Explosives Rules, 2008: These provide for safe manufacture, possession, sale, use, transportation and import of explosive materials such as diesel, Oil and lubricants etc.; and also for regulating the use of any explosives used in blasting and/or demolition. All applicable provisions will need compliance by the contractors.
15. The Petroleum Rules, 2002: This provides for safe use and storage of petroleum products, and will need to be complied by the contractors.
16. The Gas Cylinder Rules 2004 and amendments: This provides for regulations related to storage of gas, and possession of gas cylinder more than the exempted quantity. Contractors should comply with all the requirements of this Rule.
17. Manufacture, Storage and Import of Hazardous Chemical Rules of 1989 and as amended: These provide for use and storage of hazardous material such as highly inflammable liquids like HSD/LPG. Contractors will need to ensure compliance to the Rules; and in the event where the storage quantity exceeds the regulated threshold limit, the contractors will be responsible for regular safety audits and other reporting requirements as prescribed in the Rules.
18. Hazardous & Other Wastes (Management and Transboundary Movement) Rules, 2016: These provide for protection of general public from improper handling storage and disposal of hazardous waste. The rules prescribe the management requirement of hazardous wastes from its generation to final disposal. Contractors will need to obtain permission from the State Pollution Control Boards and other designated authorities for storage and

handling of any hazardous material; and will to ensure full compliance to these rules and any conditions imposed in the permit.

19. The Bio Medical Waste Management Rules, 2016: This provides for control, storage, transportation and disposal of bio-medical wastes. As and where the contractor has any first aid facility and dispensaries, established in either temporary or permanent manner, compliance to these Rules are mandatory.
20. Construction and Demolition Waste Management Rules, 2016: This provides for management of construction and demolition waste (such as building materials possible to be reused, rubble and debris or the like); and applies to all those waste resulting from construction, re-modelling, repair or demolition of any civil structure. Contractor will need to prepare a waste disposal plan and obtain required approval from local authorities, if waste generation is more than 20 tons in any day or 300 tons in any month during the contract period; and ensure full compliance to these rules and any conditions imposed in the regulatory approval.
21. The E-Waste (Management) Rules, 2016: This provides for management of E-wastes (but not covering lead acid batteries and radio-active wastes) aiming to enable the recovery and/or reuse of useful material from e-waste, thereby reducing the hazardous wastes destined for disposal and to ensure the environmentally sound management of all types of waste of electrical and electronic equipment. This Rule applies to every manufacturer, producer, consumer, bulk consumer, collection centers, dealers, e-retailer, refurbisher, dismantler and recycler involved in manufacture, sale, transfer, purchase, collection, storage and processing of e-waste or electrical and electronic equipment listed in Schedule I, including their components, consumables, parts and spares which make the product operational.
22. Plastic waste Management Rules, 2016: This provides for control and management of the plastic waste generated from any activity. Contractors will ensure compliance to this Rule.
23. The Batteries (Management and Handling) Rules 2001: This provides for ensuring safe disposal and recycling of discarded lead acid batteries likely to be used in any equipment during construction and operation stage. Rules require proper control and record keeping on the sale or import of lead acid batteries and recollection of the used batteries by registered recyclers to ensure environmentally sound recycling of used batteries. Contractors will ensure compliance to this Rule.
24. The Ozone Depleting Substances (Regulation and Control) Rules, 2000 and as amended: This provides for regulation of production and consumption of ozone depleting substances in the country, and specifically prohibits export to or import from countries not specified in the Rules, and prohibits unless specifically permitted, any use of ozone depleting substance.
25. The Coastal Regulation Zone Notifications, 1991 and as amended: This provides for regulation of development activities within the 500m of high tide line in coastal zone and 100m of stretches of rivers and estuaries influenced by tides. Contractors will be required to ensure that no work starts until applicable clearances under the Notification is not available. Contractors will be responsible for implementation of any plan stipulated as per the permission under this Notification; and will be required to prepare and submit to the employer and compliance report stipulated in the permission under the Notification.
26. The Motor Vehicle Act 1988 as amended (and State Motor Vehicle Acts as may be in force) and the Motor Vehicle Rules, 1989, and as amended (and State Motor Vehicle Rules as may be in force): To minimize the road accidents, penalizing the guilty, provision of compensation to victim and family and check vehicular air and noise pollution. Contractors will be required to ensure full compliance to these rules.
27. Easement Act, 1882: This provides for the rights of landowners on groundwater. Contractors will need to ensure that other landowners' rights under the Act is not affected by any groundwater abstraction by the contractors.
28. State Groundwater Acts and Rules as may be in force and the Guidelines for Groundwater Abstraction for drinking and domestic purposes in Notified Areas and Industry/Infrastructure project proposals in Non-Notified areas, 2012: These provide for regulating extraction of ground water for construction/industrial and drinking and

domestic purposes. Contractors will need to obtain permission from Central/State Groundwater Boards prior to groundwater abstraction through digging any bore well or through any other means; and will to ensure full compliance to these rules and any conditions imposed in the permit.

29. The Mines Act, 1952 as amended; the Minor Mineral and concession Rules as amended; and the State Mineral (Rights and Taxation) Acts as may be in force: These provide for for safe and sound mining activity. The contractors will procure aggregates and other building materials from quarries and borrow areas approved under such Acts. In the event the contractors open any new quarry and/or borrow areas, appropriate prior permission from the State Departments of Minerals and Geology will need to be obtained. Contractors will also need to ensure full compliance to these rules and any conditions imposed in the permit.
30. The Insecticides Act, 1968 and Insecticides Rules, 1971 and as amended: These provide for regulates the manufacture, sale, transport, distribution, export, import and use of pesticides to prevent risk to human beings or animals, and for matters connected therewith. No one should import or manufacture; sell, stock or exhibit foe sale; distribute, transport, use: (i) any misbranded insecticides, (ii) any insecticide the sale, distribution or use of which is for the time being prohibited under the Act; and (iii) any insecticide except in accordance with the condition on which it was registered under the Act.
31. National Building Codes of India, 2005 and as amended: This provides guidelines for regulating the building construction activities in India. The code mainly contains administrative regulations, development control rules and general building requirements; stipulations regarding materials, structural design and construction; and building and plumbing services. Contractors will be required to comply with all Bureau of Indian Standards Codes dealing with: (i) use and disposal of asbestos containing materials in construction; (ii) paints containing lead; (iii) permanent and temporary ventilations in workplace; (iv) safety, and hygiene at the workplace; (v) prevention of fire; (vi) prevention of accidents from faulty electrical gadgets, equipment and accessories; and all other such codes incidental to the Contract.

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## SECTION X - CONTRACT FORMS

### Notes to Bidders on working with the Sample Contractual Forms

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The following forms are to be completed and submitted by the successful Bidder following receipt of the Letter of Acceptance from the Purchaser: (i) Contract Agreement, with all Appendices; (ii) Performance Security; and (iii) Advance Payment Security.

- **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 Bidder's Bid Price Schedules are attached to the Agreement. These contain corrections and adjustments to the Supplier's bid prices to correct errors, adjust the Contract Price to reflect – if applicable - any extensions to bid validity beyond the last day of original bid validity plus 56 days, etc.
- **Performance Security:** Pursuant to GCC Clause 13.3, the successful Bidder is required to provide the Performance Security in the form contained in this section of these bidding documents and in the amount specified in accordance with the SCC.
- **Advance Payment Security:** Pursuant to GCC Clause 13.2, the successful Bidder 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 these bidding documents or another form acceptable to the Purchaser. If a Bidder 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 bid 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 bidding documents for the information of Bidders.

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## NOTIFICATION OF INTENTION TO AWARD

For the attention of Bidder'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 Bidders. The Notification must be sent to all Bidders simultaneously. This means on the same date and as close to the same time as possible.]***

**DATE OF TRANSMISSION:** This Notification is sent by: *[email/fax]* on *[date]* (local time)

### Notification of Intention to Award

**[Purchaser]:** *Project on Climate Resilient Agriculture (PoCRA)*

**Project:** *Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform for Project on Climate Resilient Agriculture (PoCRA)*

**Contract title:** *[insert the name of the contract]*

**Country:** *India*

**Loan No. /Credit No. / Grant No.:** *88290-IN*

**RFB No:** *IN-MAHAPOCRA-102980*

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 Bid, and/or
- b) submit a Procurement-related Complaint in relation to the decision to award the contract.

### 1. The successful Bidder

<b>Name:</b>	<i>[insert name of successful Bidder]</i>
<b>Address:</b>	<i>[insert address of the successful Bidder]</i>
<b>Contract price:</b>	<i>[insert contract price of the successful Bidder]</i>
<b>Total combined score:</b>	<i>[insert the total combined score of the successful Bidder]</i>

**2. Other Bidders** *[INSTRUCTIONS: insert names of all Bidders that submitted a Bid. If the Bid's price was evaluated include the evaluated price as well as the Bid price as read out.]*

<b>Name of Bidder</b>	<b>Technical Score (If applicable)</b>	<b>Bid price</b>	<b>Evaluated Bid Cost</b>	<b>Combined Score (if applicable)</b>
[insert name]	[insert Technical score]	[insert Bid price]	[insert evaluated cost]	[insert combined score]
[insert name]	[insert Technical score]	[insert Bid price]	[insert evaluated cost]	[insert combined score]
[insert name]	[insert Technical score]	[insert Bid price]	[insert evaluated cost]	[insert combined score]
[insert name]	[insert Technical score]	[insert Bid price]	[insert evaluated cost]	[insert combined score]
[insert name]	[insert Technical score]	[insert Bid price]	[insert evaluated cost]	[insert combined score]

**3. Reason/s why your Bid was unsuccessful** *[Delete if the combined score already reveals the reason]*

*[INSTRUCTIONS; State the reason/s why this Bidder's Bid was unsuccessful. Do NOT include: (a) a point by point comparison with another Bidder's Bid or (b) information that is marked confidential by the Bidder in its Bid.]*

**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 Bid. 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 Bidder, 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] *delete if not used*

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 Bidder, 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] *delete if not used*

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.

Further information:

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 Bidder who submitted a Bid 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 PoCRA:

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

**Name:** \_\_\_\_\_

**Title/position:** \_\_\_\_\_

**Telephone:** \_\_\_\_\_

**Email:** \_\_\_\_\_

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## LETTER OF ACCEPTANCE

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To: \_\_\_\_\_

This is to notify you that your Bid dated \_\_\_\_\_ for execution of the \_\_\_\_\_ for the Contract Price in the aggregate of \_\_\_\_\_, as corrected and modified in accordance with the Instructions to Bidders 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 BDS ITB 49.1 within eight (8) Business days using the Beneficial Ownership Disclosure Form, included in Section X, - Contract Forms, of the Bidding Document.

***[Choose one of the following statements:]***

We accept that \_\_\_\_\_ *[insert the name of Adjudicator proposed by the Bidder]* be appointed as the Adjudicator<sup>1</sup>.

***[or]***

We do not accept that \_\_\_\_\_ *[insert the name of the Adjudicator proposed by the Bidder]* be appointed as the Adjudicator, and by sending a copy of this Letter of Acceptance to \_\_\_\_\_ *[insert name of the Appointing Authority]*, the Appointing Authority, we are hereby requesting such Authority to appoint the Adjudicator in accordance with ITB 51 and GCC 43.1.4<sup>2</sup>.

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

Name and Title of Signatory: \_\_\_\_\_

Name of Agency: \_\_\_\_\_

Attachment: Contract Agreement

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<sup>1</sup> To be used only if the Supplier disagrees in the Bid with the Adjudicator proposed by the Purchaser in the Instructions to Bidders, and has accordingly offered another candidate.

<sup>2</sup> To be used only if the Supplier disagrees in the Bid with the Adjudicator proposed by the Purchaser in the ITB, has accordingly offered another candidate, and the Purchaser does not accept the counterproposal.

## 1. CONTRACT AGREEMENT

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THIS CONTRACT AGREEMENT is made

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

BETWEEN

(1) ***Project on Climate Resilient Agriculture (PoCRA)***, by Government of Maharashtra in partnership with World Bank, ***India*** and having its principal place of business at Shop number 30 B, Arcade, World Trade Center, Cuff Parade, Mumbai 400005 (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> <ul style="list-style-type: none"> <li>(a) This Contract Agreement and the Appendices attached to the Contract Agreement</li> <li>(b) Notification of Award</li> <li>(c) Special Conditions of Contract</li> <li>(d) General Conditions of Contract</li> <li>(e) Technical Requirements (including Implementation Schedule)</li> <li>(f) The Supplier’s bid (Technical Part and Financial Part) and original Price Schedules</li> <li>(g) <b><i>[ Add here: any other documents e.g. ‘JV Agreements if applicable ]</i></b></li> </ul> |
|                    | 1.2 | Order of Precedence (Reference GCC Clause 2)  |
|                    |     | <p>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</p>  |

		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.	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: <i>[ 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 ],</i> 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.
Contract Price and Terms of Payment		
Article 3.	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;  (d) <i>[specify here: any other conditions.]</i>  Each party shall use its best efforts to fulfill the above conditions for which it is responsible as soon as practicable.
Effective Date for Determining Time for Operational Acceptance		
	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 *[if there is no Adjudicator, state "not applicable"]*
- 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

Project on Climate Resilient Agriculture (**PoCRA**), "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) (vi), 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.

*[Note: if ITB 51 provides for an Adjudicator from list provided by an institution, kindly state that 'the daily fee and reimbursable expenses payable to the Adjudicator will be governed by rules of ..... [name of the Institution]].*

*[Note: the forms below for 'Appointment of Adjudicator', 'Summary of Adjudicator's Responsibilities' and 'Format of Adjudicator's Recommendation' are Samples and should be suitably modified/ adapted as required]*

## Sample format of Appointment of Adjudicator Letter of Appointment of Adjudicators

Sub: \_\_\_\_\_ (Name of the Contract)

**To**

Name and address of the Adjudicator

4. We hereby confirm your appointment as adjudicator for the above contract to carry out the assignment specified in this Letter of Appointment.
2. For administrative purpose \_\_\_\_\_ (*name of the officer representing the purchaser*) has been assigned to administer the assignment and to provide the Adjudicator with all relevant information needed to carry out the assignment on behalf of both the purchaser and the contractor. The services will be required during the period of contract for the information systems project (Name of the Contract) \_\_\_\_\_.
3. The Adjudicator shall visit the project site once in 3 (three) months till the completion of the IS work indicated above or as specifically requested by Purchaser/Supplier for the period upto the end of defects liability period with prior intimation to the Purchaser and the Supplier. The duration of each visit shall ordinarily be for one day only. These durations are approximate and (*Name of the purchaser and Name of the Contractor*) may find it necessary to postpone or cancel the assignment and/or shorten or extend the duration.
4. The appointment will become effective upon confirmation of letter by you. The appointment of Adjudicator shall be liable for termination under a 30 (thirty) days written notice from the date of issue of the notice, if both Purchaser and the Supplier so desire. Also, the appointment shall automatically stand terminated 14 days after the defect notice / correction period as stated in GCC/SCC Clause 29 of the Conditions of Contract is over.
5. The Adjudicator will be paid a fee of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ only) per each day of visit at the project site. The actual expenses for boarding and traveling in connection with the assignment will be reimbursed to the Adjudicator. The Adjudicator will submit a pre-receipted bill in triplicate to the purchaser indicating the date of the visit, fees for the visit and a proof in support of the actual expenditure incurred by him [ only for items valued above Rs. 500 each] against boarding, lodging and traveling expenses after performing the visit on each occasion. The Purchaser will make the admissible payment (both the Purchaser's and the Supplier's share) to the Adjudicator within 30 days of the receipt of the bill. The Supplier's share on this account (half the paid amount) will be recovered by the Purchaser from the Supplier's bills against the IS work.



6. In accepting this assignment, the Adjudicator should understand and agree that he is responsible for any liabilities and costs arising out of risks associated with travel to and from the place of emergency repatriation, loss or damage to personal/professional effects and property. The Adjudicator is advised to effect personal insurance cover in respect of such risks if he does not already have such cover in place. In this regard, the Adjudicator shall maintain appropriate medical, travel, accident and third-party liability insurance. The obligation under this paragraph will survive till termination of this appointment.
  
7. Procedures for resolution of disputes by the Adjudicator is described in the contract of \_\_\_\_\_(name of the contract) between the Purchaser and the Supplier vide clause GCC/SCC 43 of the Conditions of Contract. Your recommendation should be given in the format attached, within 28 days of receipt of a notification of dispute.
  
8. The Adjudicator will carry out the assignment in accordance with the highest standard of professional and ethical competence and integrity, having due regard to the nature and purpose of the assignment, and will conduct himself in a manner consistent herewith. After visiting the project site, the Adjudicator will discuss the matter with the Purchaser and if necessary with the Supplier before arriving at any decision.
  
9. The Adjudicator will agree that all knowledge and information not within the public domain, which may be acquired while carrying out this service shall be all time and for all purpose, regarded as strictly confidential and held in confidence, and shall not be directly or indirectly disclosed to any party whatsoever, except with the permission of the purchaser and the contractor. The Adjudicator's decision should be communicated in the form of a speaking order specifying the reasons.

10. The Adjudicator will agree that any manufacturing or construction firm with which he might be associated with, will not be eligible to participate in bidding for any goods or works resulting from or associated with the project of which this consulting assignment forms a part

Read and Agreed

Name of Adjudicator

Signature

Place:

Date:

Name of Purchaser

Signature of authorized representative of Purchaser

Name of the Supplier

Signature of authorized representative of Supplier

Attachment: Copy of contract document between the Purchaser and the Supplier and format for recommendation.

## **SUMMARY OF ADJUDICATOR'S RESPONSIBILITIES**

The Adjudicator has the following principal responsibilities:

1. Visit the site periodically.
2. Keep abreast of job activities and developments.
3. Encourage the resolution of disputes by the parties.
4. When a dispute is referred to it, conduct a hearing (no legal presentation), complete its deliberations, and prepare recommendations in a professional and timely manner(as per sample format)

## Sample Format of Adjudicator's Recommendation

### [Project Name] Recommendation of Adjudicator

Dispute No. XX [NAME OF DISPUTE]

Hearing Date: \_\_\_\_\_

#### **Dispute**

Description of dispute. A one or two sentence summation of the dispute.

#### **Supplier's Position**

A short summation of the Supplier's position as understood by the Adjudicator.

#### **Purchaser's Position**

A short summation of the Purchaser's position as understood by the Adjudicator.

#### **Recommendation**

The Adjudicator's specific recommendation for settlement of the dispute. (*The recommended course is consistent with the explanation*).

#### **Explanation**

(*This section could also be called Considerations, Rationale, Findings, Discussion, and so on.*)

The Adjudicator's description of how each recommendation was reached.

Respectfully submitted,

Date : \_\_\_\_\_

Date : \_\_\_\_\_

Date : \_\_\_\_\_

### Appendix 3. List of Approved Subcontractors

The Purchaser has approved use of the following Subcontractors nominated by the Supplier for carrying out the item or component of the System indicated. Where more than one Subcontractor is listed, the Supplier is free to choose between them, but it must notify the Purchaser of its choice sufficiently in advance of the time when the subcontracted work needs to commence to give the Purchaser reasonable time for review. In accordance with GCC Clause 20.1, the Supplier is free to submit proposals for Subcontractors for additional items from time to time. No subcontracts shall be placed with any such Subcontractors for additional items until the Subcontractors have been approved in writing by the Purchaser and their names have been added to this list of Approved Subcontractors, subject to GCC Clause 20.3.

*[ specify: item, approved Subcontractors, and their place of registration that the Supplier proposed in the corresponding attachment to its bid and that the Purchaser approves that the Supplier engage during the performance of the Contract. Add additional pages as necessary.]*

Item	Approved Subcontractors	Place of Registration





## **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 Bid. These Revised Price Schedules reflect any corrections or adjustments to the Supplier's bid price, pursuant to the ITB Clauses 30.3 and 36.2.



## **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).

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## **2. PERFORMANCE AND ADVANCE PAYMENT SECURITY FORMS**

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## 2.1 Performance Security Form (Bank Guarantee) (Bank Guarantee)

*[The bank, as requested by the successful Bidder, shall fill in this form in accordance with the instructions indicated]*

*[Guarantor letterhead or SWIFT identifier code]*

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*[insert: **Bank's Name, and Address of Issuing Branch or Office**]*

**Beneficiary:** Project on Climate Resilient Agriculture (PoCRA)

Shop number 30 B, Arcade,

World Trade Center, Cuff Parade

Mumbai 400005

**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 select: of months/of years (of the Warranty Period that needs to be covered by the remaining guarantee)**]* from the date

---

<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.*

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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

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*[Guarantor letterhead or SWIFT identifier code]*

**Beneficiary:** Project on Climate Resilient Agriculture (PoCRA)

Shop number 30 B, Arcade,  
World Trade Center, Cuff Parade  
Mumbai 400005

**RFB No. and Title:** *[insert number and title of bidding process]*

**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.

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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.

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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 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]*<sup>1</sup>, 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.

\_\_\_\_\_  
*[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> Insert the expected expiration date of the Time for Completion. The Purchaser should note that in the event of an extension of the time for completion of the Contract, the Purchaser would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the Purchaser might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [six months][one year], in response to the Beneficiary's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."

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### **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 RFB* ]

RFB: [ *insert: title and number of RFB* ]

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 ***Project on Climate Resilient Agriculture (PoCRA)*** (hereinafter the “Purchaser”) dated [ *insert: date of Contract* ], relating to the ***Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform***, 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: *Project Director*

Project on Climate Resilient Agriculture, PoCRA



### 3.2 Operational Acceptance Certificate

Date: [ *insert: date* ]

Loan/Credit Number: [ *insert: loan or credit number from RFB* ]

RFB: [ *insert: title and number of RFB* ]

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 ***Project on Climate Resilient Agriculture (PoCRA)*** (hereinafter the “Purchaser”) dated [ *insert: date of Contract* ], relating to the ***Design, Supply, Installation, Operations and Maintenance of Integrated Digital Platform***, 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 PoCRA

Signed:

Date:

in the capacity of: *Project Director*

Project on Climate Resilient Agriculture, PoCRA

#### 4. Change Order Procedures and Forms

Date: *[ insert: date ]*

Loan/Credit Number: *[ insert: loan or credit number from RFB ]*

RFB: *[ insert: title and number of RFB ]*

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-X-nnn.
- (2) Change Estimate Proposals shall be numbered CN- X-nnn.
- (3) Estimate Acceptances shall be numbered CA- X-nnn.
- (4) Change Proposals shall be numbered CP- X-nnn.
- (5) Change Orders shall be numbered CO- X-nnn.

On all forms, the numbering shall be determined by the original CR- X-nnn.

Note: (a) Change Requests issued from the Purchaser's Home Office and the site representatives of the Purchaser shall have the following respective references:

Home Office      CR-H-nnn

Site                CR-S-nnn

- (b) The above number "nnn" is the same for a Change Request Proposal, a Change Estimate Proposal, an Estimate Acceptance, a Change Proposal and a Change Order

**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 Pending Agreement Change Order Form
- 4.7 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 RFB ]*

RFB: *[ insert: title and number of RFB ]*

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 No.....[ insert: number of 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: <i>[ insert: description ]</i>	
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 PoCRA

Signed:

Date:

in the capacity of: *Project Director*

Project on Climate Resilient Agriculture, PoCRA

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## 4.2 Change Estimate Proposal Form

(Supplier's Letterhead)

Date: *[ insert: date ]*

Loan/Credit Number: *[ insert: loan or credit number from RFB ]*

RFB: *[ insert: title and number of RFB ]*

Contract: *[ insert: name of System or Subsystem and number of Contract ]*

To:

Project Director

PoCRA,

shop 30 B, Arcade,

World Trade Center,

Cuff Parade, Mumbai, 400005.

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 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 RFB ]*

RFB: *[ insert: title and number of RFB ]*

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:



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 PoCRA

Signed:

Date:

in the capacity of: ***Project Director, Project on Climate Resilient Agriculture (PoCRA).***

## 4.4 Change Proposal Form

(Supplier's Letterhead)

Date: *[ insert: date ]*

Loan/Credit Number: *[ insert: loan or credit number from RFB ]*

RFB: *[ insert: title and number of RFB ]*

Contract: *[ insert: name of System or Subsystem and number of Contract ]*

To:

Project Director,

PoCRA,

Shop 30 B, Arcade,

World Trade Center,

Cuff Parade, Mumbai, 400005.

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 PoCRA
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 other higher level authority in the Supplier's organization ]***

## 4.5 Change Order Form

(Purchaser's Letterhead)

Date: *[ insert: date ]*

Loan/Credit Number: *[ insert: loan or credit number from RFB ]*

RFB: *[ insert: title and number of RFB ]*

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 approve the Change Order for the work specified in Change Proposal No. *[ insert: number ]*, and agree to adjust the Contract Price, Time for Completion, and/or other conditions of the Contract in accordance with GCC Clause 39 of the Contract.

1. Title of Change: *[ insert: name ]*
2. Request for Change No./Rev.: *[ insert: request number / revision ]*
3. Change Order No./Rev.: *[ insert: order number / revision ]*
4. Originator of Change: *[ select: Purchaser / Supplier; and add: name ]*
5. Authorized Price for the Change:  
Ref. No.: *[ insert: number ]* Date: *[ insert: date ]*

*[ insert: amount in foreign currency A ]* plus *[ insert: amount in foreign currency B ]* plus  
*[ insert: amount in foreign currency C ]* plus *[ insert: amount in local currency ]*

6. Adjustment of Time for Achieving Operational Acceptance: *[ insert: amount and description of adjustment ]*

7. Other effects, if any: [ state: *“none” or insert description* ]

For and on behalf of the PoCRA

Signed:

Date:

in the capacity of: *Project Director, Project on Climate Resilient Agriculture.*

For and on behalf of the Supplier

Signed:

Date:

in the capacity of: [ state *“Supplier’s Representative” or higher level authority in the Supplier’s organization* ]

## 4.6 Pending Agreement Change Order Form

(Purchaser's Letterhead)

Date: [ *insert: date* ]

Loan/Credit Number: [ *insert: loan or credit number from RFB* ]

RFB: [ *insert: title and number of RFB* ]

Contract: [ *insert: name of System or Sub-system and number of Contract* ]

To: [ *insert: name of Supplier and address* ]

Attention: [ *insert: name and title* ]

Dear Sir or Madam:

We instruct you to carry out the work in the Change Order detailed below in accordance with GCC Clause 39 of the Contract.

1. Title of Change: [ *insert: name* ]
2. Purchaser's Request for Change No./Rev.: [ *insert: request number / revision* ], dated: [ *insert: date* ]
3. Supplier's Change Proposal No./Rev.: [ *insert: number / revision* ], dated: [ *insert: date* ]
4. Brief Description of Change: [ *insert: description* ]
5. The System, Sub-system or equipment component affected by the requested Change: [ *insert: description* ]
6. Technical documents and/or Reference Drawings for the requested Change:

Document or Drawing No.

Description

7. Adjustment of Time for Achieving Operational Acceptance: [ *insert: amount and description of adjustment* ]
8. Other effects, if any: [ *state: "none"; or insert: description* ]
9. Other terms and conditions: [ *state: "none"; or insert: terms and conditions* ]

For and on behalf of the PoCRA

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

in the capacity of: *Project Director, Project on Climate Resilient Agriculture.*

## 4.7 Application for Change Proposal Form

(Supplier's Letterhead)

Date: *[ insert: date ]*

Loan/Credit Number: *[ insert: loan or credit number from RFB ]*

RFB: *[ insert: title and number of RFB ]*

Contract: *[ insert: name of System or Subsystem and number of Contract ]*

To:

Project Director

PoCRA,

Shop 30 B, Arcade,

World Trade Center,

Cuff Parade, Mumbai, 400005.

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 higher level authority in the Supplier's organization ]*

***[Note: Reference GCC 44 - delete these sample forms (5, 6 and 7) or modify them to suit the requirements of the proposed contract]<sup>1</sup>***

## 5. FORM OF TRUST RECEIPT FOR INFORMATION SYSTEMS AND ASSOCIATED GOODS RECEIVED

We M/s (supplier's Name).....having our Principal place of business at .....having been awarded a Contract No.....  
Dated.....for (Contract Name).....by (Name of purchaser) .....

We do hereby acknowledge the receipt of the Information Systems and associated goods as are fully described and mentioned under Documents of Title/RR/LR etc. and in the schedule annexed hereto, which shall form an integral part of this receipt as "Trustee" of ..... (*Name of Purchaser*). The aforesaid materials etc. so received by us shall be exclusively used in the successful performance of the aforesaid Contract and for no other purpose whatsoever. We undertake not to create any charge, lien or encumbrance over the aforesaid materials etc, in favour of any other person/ institution(s)/ Banks.

For M/s .....  
(Supplier's Name)

Dated: .....

(AUTHORISED SIGNATORY)

Place: .....

SEAL OF COMPANY

---

<sup>1</sup> Where the Purchaser hands over his equipment to the Supplier for executing the Contract, then the Supplier may be asked, at the time of taking delivery of the equipment through any dispatch documents, furnish trust Receipt for Information Systems and associated goods and also execute an Indemnity Bond in favour of the Purchaser in the form acceptable to the Purchaser for keeping the equipment in safe custody and to utilize the same exclusively for the purpose of the said Contract. If this indemnity bond is proposed to be used, it should be made a part of the GCC/SCC 44.

**6a. FORM OF INDEMNITY BOND TO BE EXECUTED BY THE SUPPLIER  
FOR THE INFORMATION SYSTEM HANDED OVER BY THE PURCHASER  
FOR PERFORMANCE OF ITS CONTRACT**

**(Entire Information System Consignment in one Lot)**

**(On non-Judicial stamp paper of appropriate value)**

**INDEMNITY BOND**

THIS INDEMNITY BOND is made this ..... Day of ..... 20  
..... by .....(*Supplier's legal Name*) a Company registered under the Companies  
Act, 1956/Partnership-firm/Proprietary concern having its Registered Office at .....  
(Hereinafter called as 'Supplier' or "Obligor" which expression shall include its successors and permitted  
assigns) in favour of .....(*Name of Purchaser*), a Company incorporated under the  
Companies Act, 1956 having its Registered Office at ..... and its project at  
.....(hereinafter called ".....".....{*Abbreviated name of the Purchaser*} which  
expression shall include its successors and assigns) :

WHEREAS .....@..... has awarded to the Supplier a Contract for .....vide its  
Notification of Award/Contract No.....dated..... and its Amendment No.  
..... and Amendment No. .... (*Applicable when amendments have  
been issued*) hereinafter called the Contract) in terms of which .....@..... is required to hand over  
various Equipments to the Supplier for execution of the Contract.

And WHEREAS by virtue of Clause No..... of the said Contract, the Supplier is required to  
execute an Indemnity Bond in favour of .....@.....for the Equipments handed over to it by  
.....@..... for the purpose of performance of the Contract/ Erection portion of the contract  
(hereinafter called the "Equipments")

AND THEREFORE, This Indemnity Bond witnesseth as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at (*Currency and amount in Figures*)..... *currency and amount in words*)..... handed over to the Supplier for the purpose of performance of the Contract, the Supplier hereby undertakes to indemnify and shall keep .....@..... indemnified, for the full value of the Equipments. The Supplier hereby acknowledges actual receipt of the Information System etc. as pre despatch title documents handed over to the Supplier as detailed in the Schedule appended hereto. The Supplier shall hold such Information System etc. in trust as a "Trustee" for and on behalf of .....@..... .
2. That the Supplier is obliged and shall remain absolutely responsible for the safe transit/protection and custody of the Information System at .....@..... Project site against all risks whatsoever till the ecumenist are duly used/erected in accordance with the terms of the Contract and the plant/package duly erected and commissioned in accordance with the terms of the Contract is taken over by .....@..... . The Supplier undertakes to keep .....@..... harmless against any loss or damage that may be caused to the equipments.

3. The Supplier undertakes that the Equipments shall be used exclusively for the performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the Information System shall be utilized for any other work of purpose whatsoever. It is clearly understood by the Supplier that non-observance of the obligations under this Indemnity Bond by the Supplier shall inter-alia constitute a criminal breach of trust on the part of the Supplier for all intents and purpose including legal/penal consequences.
4. That .....@..... is and shall remain the exclusive owner of the equipments free from all encumbrances, charges or liens of any kind, whatsoever. The equipments shall at all times be open to inspection and checking by the Project Manager or other employees/agents authorized by him in this regard. Further, .....@..... shall always be free at all times to take possession of the Equipments in whatever form the Equipments may be, if in its opinion, the equipments are likely to be endangered, mis-utilized or converted to uses other than those specified in the Contract, by any acts or omission or commission on the part of the Supplier or any other person or on account of any reason whatsoever and the Supplier binds himself and undertakes to comply with the directions of demand of .....@..... to return the equipments without any demur or reservation.
5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the equipments or the same or any part thereof is mis-utilized in any manner whatsoever, than the Supplier hereby agrees that the decision of the project manager of .....@..... as to assessment of loss or damage to the Information System shall be final and binding on the Supplier. The Supplier binds itself and undertakes to replace the lost and/or damaged Equipments at its own cost and/or shall pay the amount of loss to .....@..... without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to .....@..... against the Supplier under the Contract and under this Indemnity Bond.
6. NOW THE CONDITION of this Bond is that if the Supplier shall duly and punctually comply with the terms and conditions of this Bond to the satisfaction of ..... @ ..... then the above shall be void, but otherwise, it shall remain in full force and virtue.

@ *Fill in abbreviated name of the Purchaser*

IN WITNESS WHEREOF, the Supplier has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned.

### SCHEDULE 1

Particulars of the Equipments handed over	Quantity	Particulars of Despatch title Documents		Value of the Equipments	Signature of Attorney in token of receipt
		RR/GR/ Bill of lading No & Date	Carrier		

**For and on behalf of**

.....  
(Supplier's Name)

**WITNESS**

1.	1.	Signature .....	Signature .....
	2.	Name .....	Name .....
	3.	Address .....	Designation of ..... Authorized representative *
2.	1.	Signature .....	(Common Seal)
	2.	Name .....	(In case of Company)
	3.	Address .....	

.....

\* Indemnity Bonds are to be executed by the authorized person and (i) in case of contracting Company under common seal of the Company or (ii) having the Power of Attorney issued under common seal of the Company with authority to execute Indemnity Bond, (iii) in case of (ii), the original Power of Attorney if it is specifically for this Contract or photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity Bond.

**6b. FORM OF INDEMNITY BOND TO BE EXECUTED  
BY THE SUPPLIER FOR THE INFORMATION SYSTEM  
HANDLED OVER IN INSTALMENTS BY THE  
PURCHASER FOR PERFORMANCE OF ITS CONTRACT**

**(On non-Judicial stamp paper of appropriate value)**

**INDEMNITY BOND**

THIS INDEMNITY BOND is made this ..... day of ..... 19  
..... by .....(*Supplier's Name*) a Company registered under the Companies Act, 1956/Partnership firm/Proprietary concern having its Registered Office at .....  
(Hereinafter called as 'Supplier' or "Obligor" which expression shall include its successors and permitted assigns) in favour of .....(*Name of Purchaser*), a Company incorporated under the Companies Act, 1956 having its Registered Office at ..... and its project at .....(hereinafter called "....." .. {*Abbreviated name of the Purchaser*} which expression shall include its successors and assigns) :

WHEREAS .....@..... has awarded to the Supplier a Contract for .....vide its Notification of Award/Contract No.....dated..... and its Amendment No. .... and Amendment No. .... (*Applicable when amendments have been issued*) hereinafter called the Contract) in terms of which .....@..... is required to hand over various Equipments to the Supplier for execution of the Contract.

And WHEREAS by virtue of Clause No..... of the said Contract, the Supplier is required to execute an Indemnity Bond in favour of .....@.....for the Equipments handed over to it by .....@..... for the purpose of performance of the Contract/ Erection portion of the contract (hereinafter called the "Equipments")

AND THEREFORE, This Indemnity Bond witnesseth as follows:

1. That in consideration of various Equipments as mentioned in the Contract, valued at (*Currency and amount in Figures*)..... *currency and amount in words*)..... to be handed over to the Supplier in installments from time to time for the purpose of performance of the Contract, the Supplier hereby undertakes to indemnify and shall keep .....@..... indemnified, for the full value of the Equipments. The Supplier hereby acknowledges actual receipt of the initial installment of the Information System etc. as per details in the Schedule appended hereto. Further, the Supplier agrees to acknowledge actual receipt of the subsequent installments of the equipments etc. as required by .....@..... in the form of Schedules consecutively numbered which shall be attached to this Indemnity Bond so as to form an integral parts of this Bond. The Supplier shall hold such Information System etc. in trust as a "Trustee" for and on behalf of .....@..... .

2. That the Supplier is obliged and shall remain absolutely responsible for the safe transit/protection and custody of the Information System at .....@..... Project site against all risks whatsoever till the equipments are duly used/erected in accordance with the terms of the Contract and the plant/package duly erected and commissioned in accordance with the terms of the Contract is taken over by .....@..... . The Supplier undertakes to keep .....@..... harmless against any loss or damage that may be caused to the equipments.
3. The Supplier undertakes that the Equipments shall be used exclusively for the performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the Information System shall be utilized for any other work of purpose whatsoever. It is clearly understood by the Supplier that non-observance of the obligations under this Indemnity Bond by the Supplier shall inter-alia constitute a criminal breach of trust on the part of the Supplier for all intents and purpose including legal/penal consequences.
4. That .....@..... is and shall remain the exclusive owner of the equipments free from all encumbrances, charges or liens of any kind, whatsoever. The equipments shall at all times be open to inspection and checking by the Project Manager or other employees/agents authorized by him in this regard. Further, .....@..... shall always be free at all times to take possession of the Equipments in whatever form the Equipments may be, if in its opinion, the equipments are likely to be endangered, mis-utilized or converted to uses other than those specified in the Contract, by any acts or omission or commission on the part of Supplier or any other person on account of any reason whatsoever and the Supplier binds himself and undertakes to comply with the directions of demand of .....@..... to return the equipments without any demur or reservation.
5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the equipments or the same or any part thereof is mis-utilized in any manner whatsoever, than the Supplier hereby agrees that the decision of the project manager of .....@..... as to assessment of loss or damage to the Information System shall be final and binding on the Supplier. The Supplier binds itself and undertakes to replace the lost and/or damaged Equipments at its own cost and/or shall pay the amount of loss to .....@..... without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to .....@..... against the Supplier under the Contract and under this Indemnity Bond.
6. NOW THE CONDITION of this Bond is that if the Supplier shall duly and punctually comply with the terms and conditions of this Bond to the satisfaction of .....@..... then the above bond shall be void, but otherwise, it shall remain in full force and virtue.

@ *Fill in abbreviated name of the Purchaser*

IN WITNESS WHEREOF, the Supplier has hereunto set its hand through its authorized representative under the common seal of the Company, the day, month and year first above mentioned.

**SCHEDULE NO. 1**

Particulars of the Equipments handed over	Quantity	Particulars of Despatch title Documents		Value of the Equipments	Signature of Attorney in token of receipt
		RR/GR/ Bill of lading No & Date	Carrier		

**For and on behalf of**.....  
*(Supplier's Name)***WITNESS**

- |    |    |                 |   |
|----|----|-----------------|---|
| 1. | 1. | Signature ..... | Signature .....                                     |
|    | 2. | Name .....      | Name .....  |
|    | 3. | Address .....   | Designation of .....<br>Authorized representative * |
| 2. | 1. | Signature ..... | (Common Seal)                                       |
|    | 2. | Name .....      | (In case of Company)                                |
|    | 3. | Address .....   |   |

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\* Indemnity Bonds are to be executed by the authorized person and (i) in case of contracting Company under common seal of the Company or (ii) having the Power of Attorney issued under common seal of the Company with authority to execute Indemnity Bond, (iii) in case of (ii), the original Power of Attorney if it is specifically for this Contract or photostat copy of the Power of Attorney if it is General Power of Attorney and such documents should be attached to Indemnity Bond.



## 7. FORM OF AUTHORISATION LETTER

(NAME OF PURCHASER)

(PROJECT ..... )

REF. NO.     :

DATE         :

To,

M/s (*Supplier's Name*) .....

Ref: Contract No..... Dated.....  
For ..... Awarded by (*Name of Purchaser*)

Dear Sirs,

Kindly refer to Contract No..... Dated ..... For .....(*Contract Name*) You are hereby authorized on behalf of .....(*Name of Purchaser*) having its registered office at ..... And its Project at ..... to take physical delivery of materials/equipments covered under despatch Document/ Consignment Note No..... \* ..... Dated ..... and as detailed in the enclosed Schedule for the sole purpose of successful performance of the aforesaid contract and for no other purposes, whatsoever.

(Signature of Project Authority)

(Designation: .....)

Date .....

ENCL: as above

---

\*       Mention LR/RR No.

**SCHEDULE OF MATERIAL/INFORMATION SYSTEM COVERED UNDER  
DESPATCH TITLE DOCUMENT (RR NO./LR NO.....)**

Sl. No.	Contract Name	NOA No./ Contract Agreement No.	Description of Materials/ Equipment's	Spec. No.	Qty.	Value	Remarks

(SIGNATURE OF THE PROJECT AUTHORITY)

(DESIGNATION) .....

(DATE) .....

## ANNEXURE - I

### Curriculum Vitae

**Name:** Jagarlapudi Adinarayana

**Date of Birth:** 20<sup>th</sup> October, 1958

#### Professional Qualifications

<i>Degree</i>	<i>College / University / Institute</i>	<i>Year of Joining</i>	<i>Year of Graduation</i>	<i>Percentage</i>
MSc (Ag)	BHU	1978	1980	3.93/4.00 OGPA
PhD	BHU	1981	1985	By Research

#### Professional Experience

<i>Employer</i>	<i>Position held</i>	<i>From</i>	<i>To</i>
IIT Bombay	Research Scientist	21.01.1986	17.12.1995
IIT Bombay	Research Scientist Grade I	18.12.1995	27.03.2005
IIT Bombay	Principal Research Scientist	28.03.2005	04.03.2009
IIT Bombay	Associate Professor	05.03.2009	31.08.2014
IIT Bombay	Professor	01.09.2014	To date
IIT Bombay	Head, CSRE	24.10.2017	To date
IIT Bombay	Convener, ISRO-IITB Space Technology Cell	24.10.2017	To date
Aston University, UK	British Council Visiting Researcher	1991	1991 (for 100 days)
International Rice Research Institute (IRRI), Philippines	INSA Visiting Researcher	1999	1999 (one month)
National Agricultural Research Center (NARC), Tsukuba/Japan	JSPS Visiting Researcher	2002	2002 (three months)
University of Bonn	INSA Visiting Researcher	2007	2007 (three months)
CTARA, IITB	Associate Faculty Member	2007	2018
Edith Cowan University, Perth	Adjunct Faculty	21.03.2011	20.03.2017 (Seven years)
University of Tokyo	Visiting Associate Professor	05.06.2013	05.08.2013 (two months)

Central Soil and Water Conservation Research & Training Institute, ICAR	Junior Technical Officer	25.06.1985	16.01.1986
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**Expertise:**

Agro/Rural-Informatics in decision making; Precision Agriculture using *disruptive technologies/multi-mode platforms* {Remote sensing; GIS; Geographical Information, Communication and Dissemination Technologies (Geo-ICDTs - Geographical Information, Communication and Dissemination Technologies consisting of Sensor Networks; Internet of Agriculture Things (IoAgTs); Crowd-sourcing; UAVs; etc.}, and Plant Phenomics.

**Research / Academic Highlights**

- Teaching/Research Faculty Member of IITB (since 1986) (Natural Resources Management; Biosphere and Lithosphere; Rural-Informatics; Image Interpretation Laboratory; Soils, Agriculture, Land Use and GIS; Geo-Informatics for Terrain Evaluation and Land Use Planning; Plant Phenomics; Climate Resilience; Soil-plant-weather continuum; Systems-approach)
- Attended and presented research results in international symposia / meetings and published in international refereed journals (more than 150)
- Reviewer for various subject-related journals (Elsevier; Wiley; Springer, International/National Societies), PhD theses (IITs/NITs/Universities),

R&D projects (DST; Ministries of Water Resources, Rural Development; Indo-French CEFIPRA; Etc.)

- Geo-ICDT Tools developed/under development: *GramyaVikas* – a Distributed Collaboration model for Rural Development Planning; *GeoSense* – a real to near-real time DSS with Geo-ICT, wireless sensing network, data mining and cloud-computing systems for precision irrigation/protection/crop yield modeling; *GrIDSesne*: Integrated and interoperable service platform /system for remote monitoring and decision support; *SenseTube* – IoT based platform for Smart Agriculture, *eCitrus* - crowd-sourcing platform for advisory services in citrus-related disease/water requirement.
- President, Asia-Pacific Federation for Information Technology in Agriculture (APFITA) (formerly known as AFITA) ([http://www.apfita.org/APFITA\\_Home.aspx](http://www.apfita.org/APFITA_Home.aspx)); President, Indian Society of Agricultural Information Technology (INSAIT) (<http://insait.in/>); Co-Chair, Ag-Working Group, Asia-Pacific Advanced Network (<http://apan.net/wg/agriculture>); Editorial Board Member of Geoderma Regional (2014-2018) (Elsevier) and International Journal of Information Technology in Agriculture (JITAg) (<http://www.jitag.org/about/board.htm>); and CIGR Board Member for its Technical

Section-VII (Information Technology) (<http://www.cigr.org/Governance/technical-sections-7.php>)

- Organizing Chair for AFITA/WCCA2018 International Conference ‘Research Frontiers in Precision Agriculture’, 24-26 Oct 2018, IIT Bombay ([http://www.apfita.org/OW/afita\\_wcca2018/index.html](http://www.apfita.org/OW/afita_wcca2018/index.html))

### **Academic Theses Output**

- Masters: 18 (+02 in progress) (Geo-ICT in Watershed management; WSN and Geo-ICT in Precision Agriculture; Crowd-source tool for rural development; watershed-based climate change strategies, Laser remote sensing for climate change monitoring, IoT in precision irrigation, geo-spatial data mining in agriculture, spatial evapotranspiration, plant phenomics, crop yield / growth modelling, etc.)
- PhD: 05 completed; 02 in advanced stage; and 04 in progress (Geo-ICT, wireless sensor networks in agriculture, precision irrigation, crop modelling and pest/disease management; watershed management information system; GeoFARMatics, Sensor Web Enablement in agriculture, Climate resilient agriculture, *Plant Phenomics*, etc.)

### **Courses Taught:**

- *In CSRE 04* (GNR 409 Terrain Evaluation and Land Use Planning, GNR 617 Image Interpretation Lab; GNR-619 Biosphere and Lithosphere; GNR-631 Rural Informatics)
- *Other Departments 02* (TD-602 from 2007-2018 (Soils, Agriculture, Land Use and GIS) in CTARA; Self-Study (Forestry and Ecology) course in 1998 in HSS)

**Sponsored R&D Projects:** 12 {07 as PI/Team Leader (DST Young Scientist; SERB; DST-JST; Ministry of Rural Development; DST-JST; Indo-Australia; CSRE-ECU/Perth); and 05 as Co-PI (Ministry of Water Resources; ISRO-IITB; DST (03))} (Please see last five research grants below)

**International Collaborations:** University of Bonn; UIUC/USA; University of Tokyo; NARO/Japan; ECU/Perth; Monash University; ICRISAT/Hyderabad

### Last Five Research Grants

- *GramyaVikas* : A distributed collaboration model/system for rural development planning (Ministry of Rural Development, Government of India) (Indian Rupees 2801100) (2005-08)
- *GeoSense*: A Geo-ICT and WSN based DSS for Agriculture/Environment assessment (Indo-Japan Bilateral Project) (Indian Rupees 62,00,00) (2008-12)
- Utilisation Of Leading Edge ICT To Enhance Australian and Indian Ground Water And Land Resources Under Climate Change Scenarios, Indo-Australia Bilateral Project (2012-13)
- *GrIDSense*: ICDTs in Water and Pest/Disease Management for Yield Improvement in Horticulture (Citrus), Information Technology Research Academy, Government of India ([https://itra.medialabasia.in/?page\\_id=4144](https://itra.medialabasia.in/?page_id=4144))(Indian Rupees 36500000) (2016-todate)
- *DSFS*: Data Science-based Farming Support System for Sustainable Crop Production under Climatic Changes, Indo-Japan Project ([https://www.jst.go.jp/pr/info/info1201/index\\_e.html](https://www.jst.go.jp/pr/info/info1201/index_e.html)) (Indian Rupees 48800000) (Indian Theme Leader: Optimal Crop Management and High Performance Plant Breeding) (2017-todate)

**Publications:** Journals: ~ 50 (including accepted/modifications); Conferences: ~108; Book chapters: 6; Patent: 01 filed) – Please see last few publications below) (**Highest IF – 4.314**)

### Recent Publications (Mainly International Journals)

- A.K. Tripathy, J. Adinarayana, K. Vijayalakshmi, S.N. Merchant, U.B. Desai, S. Ninomiya, M. Hirafujif, T. Kiura. Knowledge discovery and Leaf Spot dynamics of groundnut crop through wireless sensor network and data mining techniques, *Computers and Electronics in Agriculture*, 107, 104-114, 2014 (Elsevier).
- Aher, P. D., Adinarayana, J., & Gorantiwar, S. D. Quantification of morphometric characterization and prioritization for management planning in semi-arid tropics of India: a remote sensing and GIS approach. *Journal of Hydrology*, 511, 850-860, 2014 (Elsevier).
- J. Adinarayana, D. Sudharsan, S. Ninomiya, M. Hirafuji and T. Kiura. *GeoSense*: Decision Support System for Precision Faming in India, *Wulfania Journal*, 2 (2), 22-47, 2015 (Impact factor is 0.649).
- Suryakant Sawant, Surya S. Durbha, Adinarayana Jagarlapudi. Interoperable agrometeorological observation and analysis platform for precision agriculture: A case study in citrus crop water requirement estimation, *Computers and Electronics in Agriculture*, 138, 175-187, 2017 (Elsevier).
- Badnakhe, M.R., Durbha, S.S., Jagarlapudi, A. and Gade, R.M. Evaluation of Citrus Gummosis disease dynamics and predictions with weather and inversion

based leaf optical model, *Computers and Electronics in Agriculture*, 155, 130-141 (2018) (Elsevier).

- Ranjan, Shashi, B. V. N. P. Kambhammettu, Srinivasa Rao Peddinti, and J. Adinarayana. A compressed sensing based 3D resistivity inversion algorithm for hydrogeological applications. *Journal of Applied Geophysics*, 151, 318-327 (2018) (Elsevier).
- Peddinti, Srinivasa Rao, B. V. N. P. Kambhammettu, ShashiRanjan, SaurabhSuradhaniwar, Mrunalini R. Badnakhe, J. Adinarayana, and R. M. Gade. Modeling soil–water–disease interactions of flood-irrigated mandarin orange trees: Role of root distribution parameters. *Vadose Zone Journal* 17 (1), (2018).
- Choudhari, R. J., R. M. Gade, R. S. Lad, J. Adinarayana, and K. B. V. N. Phanindra. Epidemiological Relations to *Phytophthora* Spp. Causing Citrus Root Rot in Nagpur Mandarin. *International Journal of Current Microbiology and Applied Sciences* (2018): 406-417.
- Soumyashree Kar, Jana Kholová, Vincent Vadez, Surya S. Durbha, Hiroyoshi Iwata, Milan Urban, J. Adinarayana. Spatial Adjustment of Temporal High-Throughput Phenotyping Data using Penalized-Spline Model for Enhanced Precision of Crop Selection. *Frontiers in Plant Science* (communicated), 2019.
- Saurabh Suradhaniwar, Suryakant Sawant, Surya Durbha and Adinarayana Jagarlapudi, PowerCubes: Energy Efficiency of Time Series Prediction Algorithms on Edge Devices (*to be submitted to Computers and Electronics in Agriculture / Computer Communications*), 2019.
- S. R. Peddinti., B.V.N.P. Kambhammettu.,Ranjit Lad., JirkaŠimůnek., Gade R.M., Adinarayana J. A macroscopic soil-water transport model to simulate root water uptake in the presence of water and disease stress (*to be submitted to Water Resources Research / Journal of Hydrology*), 2019.

### **Patent**

- Sawant S.A., Durbha S.S., J. Adinarayana. SenseTube: Interoperable Wireless Sensing System for Precision Agriculture, Patent File Number: 2236/MUM/2015. (Status: published in 2016)

### **Industrial/NGO Collaboration:**

- SAVIDA Agri-Com Pvt. Ltd, Corteva Agriscience - Agriculture division of DowDuPont, Datamatrix , TCS, UPL, MOGA.