Forests & Environment Department Government of Gujarat

RFP for Selection of System Integrator for Forest environment and wildlife conservation center for Forest Department, Government of Gujarat.

Forests & Environment Department, Government of Gujarat
Block 14, 8 th floor, Sachivalaya, Gandhinagar - 382 010.
Gujarat, India

DISCLAIMER

GIL through this RFP invites proposals from reputed firms (hereafter referred as ‘Bidders’) which meets the evaluation criteria and can get empaneled with GIL to offer Forest Monitoring and Management Solution for department of forest, Government of Gujarat.

The information contained in this Request for Proposal (RFP) document or subsequently provided to Bidder(s), whether verbally or in documentary or any other form by or on behalf of the Gujarat Informatics Limited (GIL)/Department of Forest, Government of Gujarat or any of their employees or consultants, is provided to Bidder(s) on the terms and conditions set out in this RFP and such other terms and conditions subject to which such information is provided.

The purpose of this RFP is to provide interested parties with information that may be useful to them in eliciting their financial offers (the “Proposal”) pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived at by the TENDERER, in relation to the RFP. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This RFP may not be appropriate for all persons, and it is not possible for the TENDERER, its employees, or Consultants to consider the investment objectives, financial situation and particular need of each party who reads or uses this RFP. The assumptions, assessments, statements, and information contained in this RFP, may not be complete, accurate, adequate, or correct. Each Bidder should, therefore, conduct its own surveys and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements, and information contained in this RFP and obtain independent advice from appropriate sources before filling up the RFP. Any deviation in the specification or proposed solutions will be deemed as incapability of the respective Agency and shall not be considered for final evaluation process.

Information provided in this document to the Bidder(s) is on a wide range of matters, some of which depends upon interpretation of law. The information given is not an exhaustive account of statutory requirements and should not be regarded as a complete or authoritative statement of law. The TENDERER accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on law expressed herein.

TENDERER- its employees and advisors make no representation or warranty and shall have no liability to any person, including any Applicant or Bidder under any law, statute, rules or regulations or tort, principles of restitution or unjust enrichment or otherwise for any loss, damages, cost or expense which may arise from or be incurred or suffered on account of anything contained in this RFP or otherwise, including the accuracy, adequacy, correctness, completeness, delay or reliability of the RFP and any assessment, assumption, statement or information contained therein or deemed to form part of this RFP or arising in any way during the Bidding process.

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Acronyms and Explanation of Terms Used

Abbreviations and Acronyms	Description
Agency	Selected Implementation Agency for the Project
API	Application Programming Interface
BEC	Bid Evaluation Committee
BOM	Bill of Material
BoQ	Bill of Quantities
CA	Contract Agreement
COTS	Commercial Off the Shelf Product
DC	Data Centre
DR	Disaster Recovery
ERP	Enterprise Resource Planning
FRS	Functional Requirement Specifications
FAT	Functional Acceptance Test
GIS	Geographic Information System
GoI	Government of India
GST	Goods and Services Tax
HA	High Availability
ICT	Information and Communication Technologies
IP	Intellectual Property
ISO	International Organization of Standardization
IT	Information Technology
LOA	Letter of Acceptance
LAN	Local Area Network
MIS	Management Information System
O&M	Operation and Maintenance
OEM	Original Equipment Manufacturer
OS	Operating System
PAN	Permanent Account Number
PT	Performance Tests

RDBMS	Relational Database Management System
RFB	Request for Proposal
Selected Bidder	Selected Implementation Agency for the Project
SIT	System Integration Test
SLA	Service Level Agreement
SRS	Software Requirement Specifications
T&C	Terms and Conditions
TAN	The Tax Deduction and Collection Account Number
TEC	Tender Evaluation Committee
UAT	User Acceptance Testing
USP	Unique Selling Proposition
UPS	Uninterrupted Power Supply
ICCC	Integrated Forest, Environment & Wildlife conservation center

SECTION – 1

1.1 Purpose of this Document

Through this document, GIL invites tenders from reputed, experienced and financially sound System Integrator for implementation and operation of Forest Management Solution.

There will be no minimum commitment of business in respect of the development of application by the GIL at present or in future. Bidder may make their own assessment before submission of bids. No communication with respect to business/profit shall be entertained by GIL during the currency of contract.

The application platform along with services and prices discovered through this RFP may be used by GIL and /or other clients or customers of GIL.

GIL may, at its own discretion, extend the date for submission of bids. In such case, all rights and obligations of the GIL and bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

1.2 Information Regarding RFP

Proposal in the form of BID is requested for the item(s) in complete accordance with the documents/attachments as per following guidelines.

a. Bidder shall upload their bids on https://gem.gov.in/
b. The Bid Security in a separate sealed envelope super scribed with the bid document number to GIL office.
c. Bids complete in all respects should be uploaded on or before the BID DUE DATE.
d. Technical Bids will be opened in the presence of Bidders' or their representatives who choose to attend on the specified date and time.
e. In the event of the date specified for receipt and opening of bid being declared as a holiday for GIL office, the due date for submission of bids and opening of bids will be the next working day at the appointed time.
f. Services offered should be strictly as per requirements mentioned in this Bid document.
g. Please spell out any unavoidable deviations, Clause/ Article-wise in your bid under the heading Deviations.
h. Once quoted, the bidder shall not make any subsequent price changes, whether resulting or arising out of any technical / commercial clarifications sought regarding the bid, even if any deviation or exclusion may be specifically stated in the bid. Such price changes shall render the bid liable for rejection.
i. The bid submitted should be valid for a period of 180 days from the date of bid opening.

1.3 Instruction to the bidders for online bid submission

i. Tender documents are available only in electronic format which Bidders can download free of cost from Government e Marketplace (GeM).
ii. The bids have been invited through e-tendering route, i.e., the eligibility criteria, technical and financial stages shall be submitted online on the website https://gem.gov.in.
iii. Bidders who wish to participate in this bid, will have to register on GEM.

iv. Interested and eligible Bidders are required to upload the eligibility related document in eligibility bid section, Technical related document in technical bid section & Commercial Bid in Commercial bid section. The Bids should be accompanied by a bid security & bid processing fees (non-refundable) as specified in this Bid Document. The Technical & Commercial Bid must be uploaded to https://gem.gov.in & the Bid Security and bid processing fees must be delivered to the office of Gujarat Informatics Ltd on or before the last date and time of submission of the bid.

v. The eligibility section and the Bid Security & bid processing fees section will be opened on the specified date & time in presence of the Bidders or their authorized representative who choose to attend. In the event of the date specified for bid receipt and opening being declared as a holiday for the office of Gujarat Informatics Ltd the due date for submission and opening of bids will be the following working day at the scheduled times.

vi. In case of any clarifications required, please contact Deputy General Manager (Tech), GIL in writing 2 days before the Pre-Bid meeting date.

vii. In case the bidders need any support related to electronic bidding on https://gem.gov.in, bidder may contact the following office:

Technical Division
Gujarat Informatics Limited
Block No. 2, 2nd Floor, C & D Wing,
Karmayogi Bhavan Sector - 10 A,
Gandhinagar - 382010 Gujarat.
E-mail: dgmtech-gil@gujarat.gov.in

1.4 Fact Sheet

RFP for Selection of System Integrator for Forest Management for department of Forest, Government of Gujarat		
1.	Nature of Work	RFP for Selection of System Integrator for Forest Management for department of Forest, Government of Gujarat
2.	Authority	Forests & Environment Department, Government of Gujarat Block 14, 8th floor, Sachivalaya, Gandhinagar - 382 010. Gujarat.
3.	Contract Period	**5 Years**
4.	Validity of the Bid	180 (one hundred eighty) days from the Bid Due Date.
5.	Venue of pre-bid meeting, opening of Technical & Commercial Bid/s	Gujarat Informatics Limited, Block No. 2, 2nd Floor, Karmayogi Bhavan, Gandhinagar-382010
6.	GIL Contact person	**Deputy General Manager (Tech)** **E-mail:** dgmtech-gil@gujarat.gov.in adit-fed@gujarat.gov.in, icto-pccf@gujarat.gov.in
7.	Joint Ventures / Consortium	**Consortium Allowed (Lead bidder + 1 Member)**
8.	Evaluation Methodology	**Quality-cum-Cost Based Selection (QCBS)**

Note:

1) The TENDERER reserves all the rights to cancel the process and reject any or all the proposals at any time.

2) No contractual obligation whatsoever does arise from the RFP document/process unless and until a formal contract is signed and executed between the TENDERER and the successful proposers.

3) The TENDERER disclaims any factual or other errors in the RFP document (the onus is purely on the individual proposers to verify such information) and the information provided therein are intended only to help the proposers to prepare a logical proposal.

1.5 Interpretation

In this RFP, unless the context otherwise requires:

a) The singular includes the plural and vice versa, and any word or expression used in the singular has the corresponding meaning used in the plural and vice versa.

b) Reference to any gender includes the other genders.

c) Unless otherwise stated, a reference to a Clause, Sub-Clause, Paragraph, Sub paragraph, Annex, Exhibit, Attachment, Schedule, or Recital is a reference to a Clause, Sub-Clause, Paragraph, Sub paragraph, Annex, Exhibit, Attachment, Schedule, or Recital of this RFP.

d) A reference to any agreement is a reference to that agreement and all annexes, attachments, exhibits, schedules, appendices, and the like incorporated therein, as the same may be amended, modified, supplemented, waived, varied, added to, substituted, replaced, renewed, or extended, from time to time, in accordance with the terms thereof.

e) The terms "include" and "including" shall be deemed to be followed by the words "without limitation", whether so followed, or mentioned in this RFP.

f) A reference to a "writing" or "written" includes printing, typing, lithography and other means of reproducing words in a visible form.

g) Any date or period outlined in this RFP shall be such date or period as may be extended by the Authority, in its absolute discretion.

h) A reference to "month" shall mean a calendar month, a reference to "week" shall mean a calendar week and a reference to "day" shall mean a calendar day, unless otherwise specified.

i) The terms "hereof', "herein", "hereto", "hereunder" or similar expressions used in this RFP mean and refer to this RFP and not to any Article, Clause or Section of this RFP.

j) The terms "Article", "Clause", "Paragraph" and "Schedule" mean and refer to the Article, Clause, Paragraph and Schedule of this RFP so specified.

k) the words "other", "or otherwise" and "whatsoever" shall not be construed ejusdem generis or be construed as any limitation upon the generality of any preceding words or matters specifically referred to.

l) In the case of any conflict, discrepancy, or repugnancy between the provisions of the RFP and the provisions of the Agreement or any other documents, provisions of the Agreement shall prevail over and supersede the provisions of other documents.

m) In the event of any disagreement or dispute between the Authority and a Bidder regarding the materiality or reasonability of any matter including any event, occurrence, circumstance, change, fact, information, document, authorization, proceeding, act, omission, claims, breach, default or otherwise, the opinion of the Authority as to the materiality or reasonability of any of the foregoing shall be final and binding on the Bidder.

n) The descriptive headings of Articles and Sections are inserted solely for convenience of reference and are not intended as complete or accurate descriptions of content thereof and shall not be used to interpret the provisions of the Agreement.

o) Words and abbreviations, which have well-known technical or trade/commercial meanings are used in this RFP in accordance with such meanings; and

p) References to any law shall include references to such law as it may, after the date of this RFP, from time to time be amended, supplemented, or re-enacted.

SECTION – 2

2.1 Eligibility Criteria

PQ Criteria for bidders

Sr.	Basic Requirement	Qualification Criteria	Documentary Evidence
A	Bidders Pre-Qualification		
A. 1	Legal Entity	The Sole bidder or the bidder in consortium should be an Indian firm - • company Should be registered/incorporated under the Companies Act 1956 or 2013 in India or an agency should be a firm/LLP at the time of the bidding • Should have a registered number of, GST, Income Tax / Pan number • Should be in operation in India for a period of at least 5 years as on publication of this RFP.	The Bidder should submit below documents - a) Copy of certification of incorporation issued by competent authority / registration Certificate/ Shop& Establishment certificate b) Copy of PAN card c) Copy of GST registration
A. 2	Financial Turnover	The bidder (The Sole bidder or the bidder in consortium) should have average annual turnover of minimum INR 60 Crores from System Integration / IT / ITES / ICT Systems Development and Implementation Work in last three audited financial years (FY 21-22, FY22-23, FY 23-24). In case of Consortium, the consortium member (other than the lead bidder) should have an average annual turnover of minimum INR 20 Crores from services related to System Integration / IT / ITES / ICT Systems Development and Implementation Work in last three audited financial years (FY 21-22, FY22-23, FY 23-24).	The Bidder should submit below document - CA certified and audited Balance Sheet and Profit & Loss statement for last three audited financial years (FY 21-22, FY22-23, FY 23-24). CA certificate mentioning turnover from the said business in financial years (FY 21-22, FY22-23, FY 23-24).
A. 3	Financial Net worth	The bidder (sole bidder or the bidders (all members) in consortium) should have a positive net worth be profit-making entity for the last three	The Bidder should submit below document - CA certificate mentioning company

		financial years (FY 21-22, FY22-23, FY 23-24).	Net Worth from the said business in financial years (FY 21-22, FY22-23, FY 23-24).
A.4	Similar Experience	The bidder (The Sole bidder or the bidder in consortium) should have experience of IT / ITES Project for central government or state government or PSUs or ULBs or Smart City or listed company in India during past seven years from the date of bid submission. (1) One project with the value of at least 90 crore or (2) Two projects with the value of at least 60 crore or (3) Three projects with the value of at least 40 crore IT / ITES Project: The Project with minimum scope for Supply, Design, Build and Maintain below components: 1. Integrated Command and Control Centre 2. CCTV Cameras for Monitoring / Surveillance 4. VMS solution with Alert management 5. Hosting of Servers, Storage, VM's, Software's, required Licenses, etc. in Data Centre/Cloud.	The Bidder should submit below document for each Project. — Copy of the Work order/Purchase Order. — Completion Certificate / Go-Live Certificate issued by the client. — Project Citation with Client details (Name, Designation, Contact Number, Email Id, etc.)
A.5		The bidder (The Sole bidder or the bidder in consortium) should have experience in execution of project for development of Web and Mobile application and providing solution on Satellite Remote Sensing data for Forest Trees Mapping or Crop Mapping for central government or state government or PSUs or listed company in India during past seven years from the date of bid submission with the values listed below. (1) One project with the value of	The Bidder should submit below document for each Project. — Copy of the Work order/Purchase Order. — Completion Certificate / Go-Live Certificate issued by the client. — Project Citation with Client details (Name, Designation, Contact Number, Email Id, etc.)

		at least 90 crore or (2) Two projects with the value of at least 60 crore or (3) Three projects with the value of at least 40 crore	
A.6	Certification	The bidder (sole bidder or members of the consortium) must possess any two of the following certifications as on date of bid submission - (a) ISO 9001 (b) ISO/IEC 20000-1 (c) ISO/IEC 27001 (d) CMM -L3 or above	The Bidder should submit copy of valid certificates
A.7	EOL & EOSS	The proposed product of the bidder should not be declared EOL or EOSS for next 5 Years from the date of Bid Submission.	Declaration from OEM of each product on his company letterhead.
A.8	Blacklisting	The bidder (sole bidder or members of the consortium) should: - Not have been banned / blacklisted by Central Government / Any State Government / PSU in India as on the date of bid submission. - Not be insolvent, in receivership, bankrupt or being wound up, not have its affairs administered by a court or a judicial officer, not have its business activities suspended and must not be the subject of legal proceedings for any of the foregoing reasons. - Not have their directors and officers convicted of any criminal offence related to their professional conduct or the making of false statements or misrepresentations as to their qualifications to enter into a procurement contract within a period of three years preceding the commencement of the procurement process, or not have been otherwise disqualified.	The bidder (sole bidder or all members in consortium) should submit Self-declaration duly Signed and stamped by the authorized Signatory in format described in RFP.

A.9	Local Office	The bidder should have at least one physical office in Gujarat. If the bidder is not having any office in Gujarat, then bidder should submit a letter of undertaking to open the office in Gujarat within 30 days from the date of issue of work order if (s)he is awarded the work.	Registration Certificate / Sale Deed / Rental Agreement/ Utility Bill in the name of the company or Declaration that the office will be set-up in Gujarat within a period of 30 days from thedate of issuance of Letter of Intent.
B	OEM Pre-Qualification		
B.1	Legal Entity	OEM of Proposed product in the bid should be in operation in India for a period of at least 5 years as on publication of this RFP.	a) Copy of certification of incorporation issued by competent authority / registration Certificate/ Shop& Establishment certificate b) Copy of PAN card c) Copy of GST registration
B.2	Financial Turnover	The Manufacturer of the proposed product (Major components proposed for the solution) should have an average annual turnover of minimum INR 600 Crores in last three audited financial years (FY 21-22, FY22-23, FY 23-24). Major components: Camera, Video wall, Networking Components, workstations , server , storage.	CA certified and audited Balance Sheet and Profit & Loss statement for last three audited financial years (FY 21-22, FY22-23, FY 23-24). CA certificate mentioning turnover from the in financial years (FY 21-22, FY22-23, FY 23-24).
B.3	Certification	The Manufacturer of the proposed product (Major components proposed for the solution) should have following certifications as on date of bid submission - (a) ISO 9001 (b) ISO/IEC 20000-1 (c) ISO/IEC 27001	Copy of valid certificate
B.4	Land Border	Any OEM from a country which shares a land border with India will be eligible to bid in this tender only if bidder is registered	Undertaking with respect to Compliance of Restrictions for

		with Competent Authority. The Competent authority for the purpose of registration shall be the Registration Committee constituted by the Department of Promotion of Internal Trade (DPIIT) of Govt. of India	Countries which share land border with India – as stipulated by Govt. of India.

Note:

i. All details and the supportive documents for the above should be uploaded in the GeM bid.
i. The bidders are requested to furnish documents to establish their eligibility (indicating the reference page number in the bid against the proofs submitted) for each of the items given in Eligibility Criteria. Relevant portions in the documents should be highlighted. If a bid is not accompanied with all necessary documents, it may be summarily rejected.
ii. Upon verification, evaluation/assessment, if in case any information furnished by the Bidder is found to be false / incorrect, their bid will be summarily rejected and no correspondence on the same shall be entertained.
iv. Submission of false/forged documents will lead to forfeiture of EMD and blacklisting of agency for a minimum period of 3 years from participating in Gujarat Govt. tenders.
v. The Bids conforming to the eligibility criterion only will be considered for further evaluation. If there is any lack of clarity in the submitted eligibility documents, evaluation committee may ask additional clarification/ documents from the concerned bidder. Committee may consider the additional documents/ clarifications for evaluation if they are as per the requirement stated in RFP.
vi. A board resolution OR power of attorney in the name of the person executing the bid, authorizing the signatory to commit the Bidder.
vi. All certificates requested in the RFP should be valid as on date of bid submission.
vii. All annexures as sought in this bid should be complete as per the information requested.
ix. Consortium with two members including lead bidder is allowed in this bid.

2.2 Methodology of Selection

BID EVALUATION PROCESS

The TENDERER will form a committee, which will evaluate the proposals submitted by the bidders for a detailed scrutiny. During evaluation of proposals, the TENDERER, may, at its discretion, ask the bidders for clarification of their Proposals.

I. Pre-Qualification evaluation:

Bidders who have submitted the valid EMD and other eligibility documents shall be considered for further evaluation. If bidders fail to submit the bid security other eligibility documents as per this RFP document, the Bid shall be out rightly rejected.

II. Technical Bid Evaluation:

Technical evaluation will be done only for those bidders who have been found to be in compliance with the Eligibility criteria. The Technical Evaluation Committee based on

Technical evaluation framework mentioned shall evaluate each proposal and allot technical score as per the technical criteria mentioned below:

Technical Evaluation Criteria:

Sr.	Evaluation Criteria	Max Marks	Documents Required
1	Company Turnover: The bidder (Sole bidder or the lead bidder of the consortium member) should have an average annual turnover of INR 60 Crores from System Integration **/ IT /ITES/** ICT Systems Development and Implementation Work in last three audited financial years (FY 21-22, FY22-23, FY 23-24). **a) > 60 Crores to <=120 Crores – 4 Marks** **b) > 120 Crores to <= 180 Crores – 7 Marks** **c) >180 Crores – 10 Marks**	10	The Bidder should submit CA certificate confirming turnover from the said business in financial years (FY 21-22, FY22-23, FY 23-24).
2	The Bidder's Certification as on date of bid submission - (a) ISO 9001 (b) ISO/IEC 20000-1 (c) ISO/IEC 27001 (d) CMMI - L3 Certification **OR Above** Any two Certification from above - 2 Marks Any Three certifications from above - 3 Marks For CMMI – L5 Certification - Additional 2 Marks	5	The Bidder should submit copy of valid Certificates
3	The bidder **(sole bidder or members of the consortium)** should have experience in large **scale IT / ITES project having scope of Integrated Command and Control Centre with VMS Software, CCTV Cameras** for any central government or state government or PSUs or ULBs or Smart City or Listed company in India during past seven years from the date of bid submission. Project Value >40 Cr to <=60 Cr – 4 Marks Project Value >60 Cr to 90 Cr – 7 Marks Project Value >90 Cr – 10 Marks	10	The Bidder should submit below document for each Project. — Copy of the Work order/Purchase Order. — Completion Certificate / Go-Live Certificate issued by the client. — Project Citation with Scope and Client details (Name, Designation, Contact Number, Email Id, etc.)
4	The bidder (sole bidder or members of the consortium) must have experience in conducting survey using Satellite Images or Drones under similar scope of the project for any Central Government / State Government / ULB / Any Smart Cities/listed company in India during	10	The Bidder should submit below document for each Project. — Copy of the Work order/Purchase Order. — Completion Certificate / Go-Live Certificate issued

	past seven years from the date of bid submission. Project Value >40 Cr to <=60 Cr – 4 Marks Project Value >60 Cr to 90 Cr – 7 Marks Project Value >90 Cr – 10 Marks		by the client. — Project Citation with Scope and Client details (Name, Designation, Contact Number, Email Id, etc.)
5	The bidder **(sole bidder or members of the consortium)** should have experience in successful execution of similar projects for central government or state government or PSUs or listed company in India during past seven years from the date of bid submission One Project - 4 Marks Two Projects – 7 Marks Three or More Projects- 10 Marks Similar Project: Project having scope for development of Web and Mobile application, Analytics Dashboard and providing solution on Satellite Remote Sensing data for Forest Trees Mapping or Crop Mapping	10	The Bidder should submit below document for each Project. — Copy of the Work order/Purchase Order. — Completion Certificate / Go-Live Certificate issued by the client. — Project Citation with Scope and Client details (Name, Designation, Contact Number, Email Id, etc.) and Implementation Partner detail (if executed through SI)
6	The bidder (sole bidder or members of the consortium) should have used High Resolution Remote Sensing Satellite data and AI/ML algorithms for generating various insights in Forestry / Vegetation mapping management. The land area covered in a single year must be at least 1,00,000 Sq. Km. for maximum five cycle of data/image processing for any Central Government / State Government / PSUs in India during past seven years from the date of bid submission >1,00,000 Sq. Km. and <=1,50,000 Sq. Km. – 5 Marks >1,50,000 Sq. Km. and <= 2,00,000 Sq. Km. – 10 Marks	15	The Bidder should submit below document for each Project. — Copy of the Work order/Purchase Order. — Completion Certificate / Go-Live Certificate issued by the client. — Project Citation with Scope and Client details (Name, Designation, Contact Number, Email Id, etc.) and Implementation Partner detail (if executed through SI)
	The bidder (sole bidder or members of the consortium) should have minimum 100 technical experts (including Project Manager, Solution Architect, GIS & Remote Sensing Expert, IT Infrastructure Expert, etc.) on bidder company payroll as on date of bid submission. >=100 FTE and <200 FTE : 4 Marks >= 200 FTE - < 300 FTE : 7 Marks	10	The bidder should submit below document - Letter from HR confirm the Name and Designation of each resource. - The Bidder should also submit the latest copy of EPF or Professional Tax Certificate.

8	Technical Presentation and Demonstration: a) Technical Presentation (10 Marks) Project Understanding, Approach and Methodology, Execution Plan, Project Governance Plan, Risk & Mitigation Plan, Tools and Assets which could be leveraged for the assignment and Proposed Resources for the project. b) Demonstration (20 Marks) - Forest Change Detection, Trees/Plantation Count, Species Mapping, Biomass estimation, Analytic Dashboard - Object detection and alert on malicious activity through various CCTV Camera - Environmental Sensor Equipped Body Worn Camera - Functionalities as per scope.	30	All Eligible bidders shall do Presentation and Demonstration to the Bid Evaluation Committee
Total Marks		**100**	

Note:

i. The Bidder shall submit valid document to comply with the technical evaluation criteria. If bidders fail to submit the documents as per the technical clause, the Bid of respective bidder shall be out rightly rejected.

ii. Technical evaluation shall include the evaluation of all the documents mentioned in the Technical Bid.

i. Technical bids shall be examined by the bid evaluation committee with respect to compliance, completeness and suitability of the proposal to the project and only the bids which are complying to the requirements mentioned in the RFP shall be considered as technically qualified.

iii. The Bidder should obtain minimum 70% score to technically qualify and shall score minimum marks in each component of Technical Criteria.

iv. If an agency quotes NIL charges / consideration, the bid shall be treated as unresponsive and will not be considered for final bid evaluation.

v. The financial bids of only technically qualified bidders would be opened.

2.3 Stage 3: Final Bid Evaluation:

a. Technical Bid Evaluation:

The technical score of a bidder 'Tb' will be assigned to the bidder and it will be awarded based on the Technical Evaluation Criteria as specified above. TENDERER's decision in this regard shall be final & binding and no further discussion will be held with the bidders.

Tb: Absolute Technical Score Tmax: Maximum Technical Score

Tn: Normalized technical score of the bidder under Consideration Normalized technical score (Tn) = Tb/Tmax * 100

b. Financial Bid evaluation:

The Financial Bids will be opened, in the presence of Bidders' representatives who choose to attend the Financial Bid opening on date and time to be communicated to all the technically qualified Bidders. The Bidder's representatives who are present shall sign a register evidencing their attendance. The name of bidder & bid prices will be announced at the meeting. The financial score of a bidder 'Fb' will be assigned to the bidder. 'Fb' will be the total financial quote made by the bidder

Fn: normalized financial score for the bidder under consideration Fb: commercial quote for the bidder under consideration
Fmin: commercial quote of the lowest evaluated financial proposal

The lowest evaluated Financial Proposal (Fmin) will be given the maximum financial score (Fn) of 100 points. The financial scores (Fn) of the other Financial Proposals will be calculated as per the formula for determining the financial scores given below:

Normalized Financial Score (Fn) = 100 x Fmin / Fb

c. Final Evaluation of Bid

Proposals will be ranked according to their combined technical (Tn) and financial (Fn) scores using the weights (T = 0.7 the weight given to the Technical Proposal; P = 0.3 the weight given to the Financial Proposal; T + P = 1). The final evaluation will be based on Final Score which shall be calculated as shown below:

Final Score (S) = Tn x T + Fn x P

The bidder achieving the highest combined technical and financial score will be invited for negotiations for awarding the contract. In case of a tie where two or more bidders achieve the same highest combined technical and financial score, the bidder with the higher normalized technical score will be invited first for negotiations for awarding the contract.

Note:

1. Financial Bids that are not as per the format provided in the RFP shall be liable for rejection.
2. The Bidder must attach valid documents in support to their Technical and Financial capabilities /strength, as mentioned above. Without proper supporting documents, the Bid proposals are liable for rejection.

SECTION - 3

3 INSTRUCTIONS TO BIDDERS

3.1 General Instruction to Bidders

All information supplied by Bidders may be treated as contractually binding on the Bidders on successful award of the assignment by the TENDERER based on this RFP. No commitment of any kind, contractual or otherwise shall exist unless and until a formal written contract has been executed by or on behalf of the TENDERER. Any notification of preferred bidder status by the TENDERER shall not give rise to any enforceable rights by the Bidder. The TENDERER may cancel this public procurement at any time prior to a formal written contract being executed by or on behalf of the TENDERER.

This RFP supersedes and replaces any previous public documentation, communications, and bidders should place no reliance on such communications. The TENDERER may terminate the RFP process at any time and without assigning any reason. The TENDERER makes no commitments, express or implied, that this process will result in a business transaction with anyone.

3.2 Cost of Bidding

3.2.1 The Bidder shall bear all costs associated with the preparation and submission of the Bid. The TENDERER will in no case be responsible for those costs, regardless of the conduct or outcome of the bidding process.

3.3 Bidding Document

Bidder can download the bid document and further amendment if any freely available on https://gem.gov.in and upload the same on https://gem.gov.in on or before due date of the tender. Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or submits a Bid not substantially responsive to the bidding documents in every respect may result in the rejection of the Bid. Under no circumstances physical bid will be accepted.

3.4 Language of Bid

The Bid prepared by the Bidder, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the TENDERER shall be in English.

3.5 Clarification and Amendment to RFP Document

3.5.1 Bidders may request clarification on any of the points contained in the RFP. Any request for clarification must be sent in writing by paper and e-mail on or before pre-bid to the Authority's address as indicated in section 1.4.

3.5.2 Bidders may also request clarifications and/or appropriate modifications to the draft of the Agreement, including suggestions on the proposed methodology (work plan), staffing and any suggestions, which may be (in the opinion of the Bidder) required to be made to improve the scope of work to be performed by the Selected Bidder, at any time but prior to the pre-bid meeting, to be organized by the Authority, in accordance with the terms of the RFP.

3.5.3 Any clarification provided by the Authority may not be relied upon by the Bidder unless such clarification is provided in writing by the Authority.

3.5.4 The Authority reserve the right to not respond to any query or clarification or amendment / modification to the Agreement, sought by a Bidder or provide any clarification to the Bidder, at its sole discretion; no extension of time shall be granted to a Bidder with respect to the Bid Due Date based on not having received a response to clarifications sought from the Authority or its authorized representatives. Nothing in this paragraph shall be considered or read as compelling or requiring the Authority to respond to any query or to provide any clarification to the queries raised by a Bidder.

3.5.5 The Authority may, at its absolute discretion issue interpretations and clarifications and corrigendum to address the query or clarification or amendment/ modification to the Agreement, as sought by a Bidder. All clarifications and interpretations circulated by the Authority shall be deemed to be part of this RFP if provided in writing. Verbal clarifications and information provided by the Authority, or its employees or representatives shall not in any way or manner be binding on the Authority or be deemed to amend/ supplement this RFP.

3.5.6 At any time before the submission of the Bids, the Authority / TENDERER may for any reason, whether at its initiative or in response to a clarification requested by a Bidder, modify the RFP by amendment. Any such amendment shall be issued in writing through corrigenda. Corrigenda shall be uploaded on the website mentioned above and shall be binding on all Bidders.

3.5.7 During the evaluation of Bids, the Authority may, at its discretion, request a Bidder for further clarifications and/or information. The request for clarification and the response thereto shall only be in writing; the Bidder shall be required to reply to the clarification within a period as specified by the Authority.

3.6 Pre-Bid Meeting

Pre-bid meeting shall be held as per GEM bid;

3.6.1 The Authority may, at its sole discretion, also decide to conduct the pre-bid meeting on a virtual platform, details of which shall be subsequently made available / uploaded onto the website by the Authority, for the knowledge of all the Bidders.

3.6.2 A maximum of 2 (two) representatives of each Bidder shall be allowed to participate in such pre-bid meeting, on the production of authority letter from the Bidder.

3.6.3 Queries, if any, proposed to be raised at the pre-bid meeting by the Bidder should be submitted in writing over email before the date of the pre-bid meeting to the below mentioned officials of the Authority:

Officer: DGM Tech, GIL
Email: dgmtech-gil@gujarat.gov.in; mgrhninfra1-gil@gujarat.gov.in, adit-fed@gujarat.gov.in, icto-pccf@gujarat.gov.in

3.6.4 The Authority at its absolute discretion shall prepare a response to the queries so raised and upload the same as a corrigendum/ addendum on the above-mentioned website. The Bidders are advised to keep checking the same from time to time.

3.7 Bid Security/ Earnest Money Deposit (EMD)

3.7.1 Bidders shall submit, along with their Bids, EMD of Rs. 2,40,00,000/-, in the form of a Demand Draft OR in the form of an unconditional Bank Guarantee by Bank

Guarantee (which should be valid for 6 months from the last date of bid submission) of any Nationalized Bank including the public sector bank or Private Sector Banks or Commercial Banks or Co-Operative Banks and Rural Banks (operating in India having branch at Ahmedabad/Gandhinagar) as per the G.R. no. FD/MSM/e-file/4/2024/2859/DMO dated 1st May 2025 issued by Finance Department or further instruction issued by Finance department time to time; in the name of "Office of the Principal Chief Conservator of Forest & Head of the Forest Force" payable at Gandhinagar (in the format specified in Format III) and must be submitted along with the covering letter.

The sealed cover should be super scribe. Bidder to submit AFFIDAVIT PHYSICALLY as per the prescribed format (To be submitted IN ORIGINAL on Non-Judicial Stamp Paper of Rs. 300/- duly attested by First Class Magistrate/ Notary public) along with the sealed cover. Bidder who have submitted EMD online has to follow the above process for Affidavit.

3.7.2 EMD of all unsuccessful bidders would be refunded by GIL within 60 Days on selection of successful bidder.

3.7.3 The EMD of the successful bidder would be returned upon successful submission of Performance Bank Guarantee as per the format provided in Format IV.

3.7.4 EMD amount is interest free and will be refundable to the unsuccessful bidders without any accrued interest on it.

3.7.5 The bid / proposal submitted without EMD, mentioned above, will be summarily rejected.

3.7.6 The EMD may be forfeited, In case of a Bidder if:

3.7.6.1 The bidder withdraws its bid during the period of bid validity.
3.7.6.2 The Bidder does not respond to requests for clarification of their Bid.
3.7.6.3 The Bidder fails to co-operate in the Bid evaluation process.
3.7.6.4 In case of successful bidder, the said bidder fails:
3.7.6.4.1 Fails to sign the agreement in time
3.7.6.4.2 Fails to submit performance bank guarantee

3.8 Preparation and Submission of Bid

The Bids shall be submitted latest by the Bid Due Date. The Bidders are required to submit the Bid in 3 (three) parts, viz.:

Part 1: EMD. (Online and hard Copy)
(a) Part 2: Technical Bid. (Online only)
(b) Part 3: Financial Bid (Online only)

Bids documents shall be accepted by the Authority only during office hours on Business Days, up to the Bid Due Date. It is further clarified that the Authority shall have the sole discretion to reject and return Bids which are received by the Authority after the Bid Due Date.

3.8.1 Part 1: EMD

3.8.1.1 Earnest Money Deposit (EMD): A Bidder is required to submit an unconditional and irrevocable bank guarantee as earnest money as applicable in this bid. It is hereby clarified that non-submission of the EMD by a Bidder, along with the submission of the Bid, shall lead to the rendering of that Bid as non-responsive, and accordingly, the Authority shall have the right to reject such Bid.

3.8.2 Part 2: Technical Bid

3.8.2.1 A scanned copy of the Technical Bid (including all documentary evidence, required formats and declarations, copy of presentation, etc.) shall be uploaded online. The uploaded document shall be with a cover letter, index page and page numbering.

3.8.2.2 If applicable in this bid, the physical submission of technical bid shall be submitted in a bound format, with a cover letter, index page and page numbering. The physical copy should be the replica of the online upload document. The bidder shall also submit the clear and legible scanned copy on pen drive along with the physical copy of the Technical Bid.

3.8.2.3 Following list is provided as the guideline for submitting various important documents along with the bid.

1. Bid Cover Letter
2. Power of Attorney for Authorized Representative
3. Bidder's Particulars as per format shared in RFP.
4. Bidder's Certificate of Registration/Certificate of Incorporation
5. GST Registration and Income Tax Certificate
6. CA certificate and copy of audited financial statements and relevant certificates.
7. Copy of Work Order/Work Completion Certificate/Self Declaration
8. Detailed approach and methodology
9. Proposed Solution Document
10. MAF of Proposed IT & Non-IT Equipment's
11. Updated Technical Bid Formats
12. Signed & Stamped RFP document along with Addenda & Corrigendum, if any
13. Any other relevant document that satisfies the requirement of the bid

3.8.2.4 The agency should submit the best proposed solution aligned to the scope defined in this RFP. The below mentioned points (as indicative) should be considered in drafting the proposed solution under response.

Sr #	Descriptions
1.	SRS, HLD, LLD and other Design and Plan Documents of the Project
2.	Sizing for required infrastructure to Host the digital platform
3.	Installation, Integration and testing of digital platform and field equipment's
4.	Unpriced BOM for the Project
5.	Backup/ Archival Process, DR Services
6.	Manpower Deployment (Technical / Non-Technical)
7.	Operation & Maintenance
8.	Plan for handling Change Management (if any)
9.	Any Other Suggestion

3.8.2.5 The Technical Bid must provide the requisite information, as specified in the below-mentioned formats (being annexed in this RFP):

Form 1	Proposal Covering Letter
Form 2	Format for General Information
Form 3	Format for Financial Summary of the Bidder
Form 4	No Blacklisting
Form 5	Not Terminated, Not Being Insolvent or In Receivership or Bankrupt
Form 6	Office in Gujarat.
Form 7	Director and Partners not involved in any criminal offence.

Form 8	Format for Showcasing Experience
Form 9	Format for Land Border on Bidder's Letterhead
Form 10	Format for Land Border on OEM's Letterhead
Form 11	Format for MAF on OEM's Letterhead
Form 12	Bank Guarantee format for Earnest Money Deposit
Form 13	Performance Bank Guarantee
Form 14	Self-Declaration
Form 15	Format for Power of Attorney

3.8.2.6 The Technical Bid Must Not include any financial information with respect to the Bid. If any financial information is submitted in the technical response document, the bid will be summarily rejected.

3.8.3 Part 3: Financial Bid (to be strictly submitted through online only)

(a) The Financial Bid shall be submitted by the Bidders substantially in the format specified in section 7 (Financial Bid Submission Form) online.

(b) The Financial Bid should be furnished in the format clearly indicating the Bid amount in both figures and words, in Indian Rupees, and signed by the Bidder's authorized signatory. In the event of any difference between figures and words, the amount indicated in words shall be taken into account.

(c) The cost should be inclusive of all the taxes, duties, fees, levies, and other charges imposed under the Applicable Law on the Bidder and its personnel.

3.9 Late Bids

3.8.1 Bids received after the due date and the specified time (including the extended period if any) for any reason whatsoever, shall not be entertained and shall be REJECTED.

3.8.2 The bids submitted by telex/ telegram/ fax/ e-mail etc. shall not be considered. No correspondence will be entertained on this matter.

3.10 Bid Opening

3.10.1 Bids will be opened in the presence of Bidder's representatives, who choose to attend. The Bidder's representatives who are present shall sign a register evidencing their attendance.

3.10.2 In the event of the specified date of Bid opening being declared a holiday for the GIL, the Bids shall be opened at the appointed time and location on the next working day.

3.10.3 The Bidder's names, bid modifications or withdrawals, discounts and the presence or absence of relevant Bid security and such other details as the TENDERER officer at his/her discretion, may consider appropriate, will be announced at the opening.

3.10.4 Immediately after the closing time, the TENDERER contact person shall open the Un-Priced Bids and list them for further evaluation.

3.10.5 Bids that are not opened at bid opening shall not be considered further for evaluation.

3.11 Bid Validity

3.11.1 Bids shall remain valid for 180 days after the date of Bid opening prescribed by the TENDERER. A Bid valid for a shorter period shall be rejected as non-responsive.

3.11.2 In exceptional circumstances, the TENDERER may solicit Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. The Bid security shall also be suitably extended. A Bidder's request to modify the Bid will not be permitted.

3.12 Contacting the Tenderer

Bidder shall not approach the TENDERER officers outside of office hours and/ or outside the TENDERER office Premises, from the time of the Bid opening to the time the Contract is awarded. Any effort by a bidder to influence the TENDERER officers in the decisions on Bid evaluation, bid comparison or contract award may result in rejection of the Bidder's offer. If the Bidder wishes to bring additional information to the notice of the TENDERER, it should do so in writing.

3.13 Rejection of Bids

The TENDERER reserves the right to reject any Bid, and to annul the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder(s) or any obligation to inform the affected Bidder(s) of the grounds for such decision.

3.14 Bid Evaluation Process

3.14.1 The TENDERER will form a committee which will evaluate the proposals submitted by the bidders for a detailed scrutiny. During evaluation of proposals, the TENDERER, may, at its discretion, ask the bidders for clarification of their Proposals.

3.14.2 The bidders are expected to provide all the required supporting documents & compliances as mentioned in this RFP.

3.14.3 During the evaluation, committee may seek the clarification in writing from the bidder, if required. If bidder fails to submit the required clarifications in due time, the evaluation will be done based on the information submitted in the bid.

3.15 Performance Guarantee/Security

3.15.1 Within defined timeline from the date of issue of Gem Contract to the Successful Bidder shall at his own expense submit unconditional and irrevocable Performance Bank Guarantee (PBG) should 5% of contract value from a Scheduled Commercial Bank /Nationalized bank (list of banks provided as part of Annexure 2) in the format prescribed in Form-6 payable on demand, for the due performance and fulfilment of the contract by the bidder. Delay in submission of valid PBG may attract penalty of INR 5000/- per day. Any Delay beyond 21 days, the TENDERER may terminate the contract and Forfeit the EMD.

3.15.2 The Performance Security shall be submitted on / or before the date of signing of the Agreement.

3.15.3 All charges whatsoever such as premium; commission etc. with respect to the PBG shall be borne by the Successful Bidder

3.15.4 The Performance Security may be forfeited by the Authority in the event of any breach or negligence or non-observance of any terms and conditions of the Agreement or for unsatisfactory performance by the Selected Bidder. The Performance Security shall be appropriated by the Authority as liquidated damages attributable to the breach or negligence or non-observance of any terms/ conditions of the Agreement by the Selected Bidder.

3.15.5 The Performance Security shall be forfeited in case the bidder withdraws his competency from the work before or after his tender is accepted & the tenderer does not complete the Contract documents.

3.15.6 Upon expiry of the Agreement Period, such portion of the Performance Security as may be considered by the Authority as sufficient to cover any incorrect or excess payments made on the bills to the Selected Bidder shall be retained until the final audit report on the account of the Selected Bidder's bill has been received and examined.

3.15.7 If the Selected Bidder fails to provide the Performance Security within the period specified in the RFP, such failure shall constitute a breach on the part of the Selected Bidder and the Authority shall be entitled to make other arrangements at the risk, cost, and expense of the Selected Bidder and/or forfeit the EMD.

3.15.8 On due performance and completion of the Agreement Period in all respects, the Performance Security will be returned to the Selected Bidder without any interest, on the presentation of an absolute 'No Demand Certificate' issued by the Authority.

3.15.9 In Case, If the tenderer terminates the bidder from the service, the performance security of the bidder would be forfeited.

3.16 Notification of Award & Signing of Contract

3.16.1 Prior to expiration of the period of Bid validity, the TENDERER will notify the successful Bidders and issue GEM Contract.

3.17 Force Majeure

Force Majeure shall mean any event or circumstances or combination of events or circumstances that materially and adversely affects, prevents or delays any Party in performance of its obligation in accordance with the terms of the Agreement, but only if and to the extent that such events and circumstances are not within the affected party's reasonable control, directly or indirectly, and effects of which could have prevented through Good Industry Practice or, in the case if construction activities through reasonable skill and care, including through the expenditure of reasonable sums of money. Any events or circumstances meeting the description of the Force Majeure which have same effect upon the performance of any contractor shall constitute Force Majeure with respect to the bidder. The Parties shall ensure compliance of the terms of the Agreement unless affected by the Force Majeure Events. The bidder shall not be liable for forfeiture of its

implementation / Performance guarantee, levy of Penalties, or termination for default if and to the extent that it's delays in performance or other failure to perform its obligations under the Agreement is the result of Force Majeure.

3.17.1 Force Majeure Events

The Force Majeure circumstances and events shall include the following events to the extent that such events or their consequences (it being understood that if a causing event is within the reasonable control of the affected party, the direct consequences shall also be deemed to be within such party's reasonable control) satisfy the definition as stated above. Without limitation to the generality of the foregoing, Force Majeure Event shall include following events and circumstances and their effects to the extent that they, or their effects, satisfy the above requirements:

3.17.2 Natural events ("Natural Events") to the extent they satisfy the foregoing requirements including:

3.17.2.1 Any material effect on the natural elements, including lightning, fire, earthquake, cyclone, flood, storm, tornado, or typhoon.

3.17.2.2 Explosion or chemical contamination (other than resulting from an act of war);

3.17.2.3 Epidemic such as plague;

3.17.2.4 Any event or circumstance of a nature analogous to any of the foregoing.

3.17.2.5 Other Events ("Political Events") to the extent that they satisfy the foregoing requirements including:

3.17.2.6 Political Events which occur inside or Outside the State of Gujarat or directly involve the State Government and the Central Government ("Direct Political Event"), including:

- Act of war (whether declared or undeclared), invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, riot, insurrection, civil commotion, act of terrorism or sabotage;

- Strikes, work to rules, go-slows which are either widespread, nation- wide, or state-wide or are of political nature;

- Any event or circumstance of a nature analogous to any of the foregoing.

3.17.3 FORCE MAJEURE EXCLUSIONS:

Force Majeure shall not include the following event(s) and/or circumstances, except to the extent that they are consequences of an event of Force Majeure:

3.17.3.1 Unavailability, late delivery

3.17.3.2 Delay in the performance of any contractor, sub-contractors, or their agents;

3.17.4 PROCEDURE FOR CALLING FORCE MAJEURE:

The Affected Party shall notify to the other Party in writing of the occurrence of the Force Majeure as soon as reasonably practicable, and in any event within 05 (five) days after the Affected Party came to know or ought reasonably to have known, of its occurrence and that the Force Majeure would be likely to have a material impact on the performance of its obligations under the Agreement.

3.18 Contract Obligations

Once a contract is confirmed and signed, the terms and conditions contained therein shall take precedence over the Bidder's bid and all previous correspondence.

3.19 Amendment to the Agreement

Amendments to the Agreement may be made by mutual agreement by both the Parties. No variation in or modification in the terms of the Agreement shall be made except by written amendment Signed by both the parties. All alterations and changes in the Agreement will consider prevailing rules, regulations, and laws applicable in the state of Gujarat.

3.20 Representations and Warranties

3.20.1 Representations and Warranties by the Selected Agency:

3.20.1.1 It is a company duly organized and validly existing under the laws of India and has all requisite legal power and authority and corporate authorizations to execute the Agreement and carry out the terms, conditions, and provisions hereof. It has in full force and effect all requisite clearances, approvals and permits necessary to enter into the Agreement and perform its obligations hereof.

3.20.1.2 The Agreement and the transactions and obligations hereof do not contravene its constitutional documents or any law, regulation or government directive and will not contravene any provisions of, or constitute a default under, any other Agreement or instrument to which it is a party or by which it or its property may be bound or any of its obligations or undertakings by which it or any of its assets are bound or cause a limitation on its powers or cause it to exceed its authorized powers.

3.20.1.3 There is no pending or threatened actions, suits or proceedings affecting the Successful Bidder or its affiliates or any of their respective assets before a court, governmental agency, commission or arbitrator or administrative tribunal which affects the Successful Bidder's ability to perform its obligations under the Agreement; and neither Successful Bidder nor any of its affiliates have immunity from the jurisdiction of a court or from legal process (whether through service of notice, attachment prior to judgment, attachment in aid of execution or otherwise). The Successful Bidder confirms that all representations and warranties of the bidder set forth in the Agreement are true, complete, and correct in all respects.

3.20.1.4 No information given by the Successful Bidder in relation to the Agreement, project documents or any document comprising security contains any material wrong statement of fact or omits to state as fact which would be materially averse to the enforcement of the rights and remedies of TENDERER or which would be necessary to make any statement, representation or warranty contained herein or therein true and correct.

3.20.2 Representations and Warranties by the TENDERER

3.20.2.1 It has full legal right; power and authority to execute the said project and to enter and perform its obligations under the Agreement and there are no proceedings pending.

3.20.2.2 The Agreement has been duly authorized, executed and delivered by the TENDERER and constitutes valid, legal, and binding obligation of TENDERER.

3.20.2.3 The execution and delivery of the Agreement with the selected agency does not violate any statutory judgment, order, degree, regulation, right, obligation or rule of any court, government authority or arbitrator of competent jurisdiction applicable in relation to the TENDERER, its assets, or its administration.

3.21 Resolution of Disputes

3.21.1 If any dispute arises between the Parties hereto during the subsistence or thereafter, in connection with the validity, interpretation, implementation or alleged material breach of any provision of the Agreement or regarding a question, including the questions as to whether the termination of the Contract Agreement by one Party hereto has been legitimate, both Parties hereto shall endeavor to settle such dispute amicably. The attempt to bring about an amicable settlement is considered to have failed as soon as one of the Parties hereto, after reasonable attempts [which attempt shall continue for not less than 30 (thirty) days], give 15 days' notice thereof to the other Party in writing.

3.21.2 In the case of such failure the dispute shall be referred to a sole arbitrator or in case of disagreement as to the appointment of the sole arbitrator to three arbitrators, two of whom will be appointed by each Party and the third appointed by the two arbitrators.

3.21.3 The place of the arbitration shall be Gandhinagar, Gujarat.

3.21.4 The Arbitration proceeding shall be governed by the Arbitration and Conciliation Act of 1996 as amended.

3.21.5 The proceedings of arbitration shall be in English language.

3.21.6 The arbitrator's award shall be substantiated in writing. The arbitration tribunal shall also decide on the costs of the arbitration procedure.

3.21.7 The Parties hereto shall submit to the arbitrator's award and the award shall be enforceable in any competent court of law.

3.22 Books & Records

The selected agency shall maintain adequate Documents Related to project's materials & equipment's for inspection and audit by the TENDERER during the terms of Contract until expiry of the performance guarantee.

3.23 Performance Guarantee

3.23.1 The Successful bidder has to submit Performance Bank Guarantee @ 5% of total order value within 15 days from the receipt of notification of award/Contract Signing for the duration of warranty of all Nationalized Bank including the public sector bank or Private Sector Banks authorized by RBI or Commercial Bank or Regional Rural Banks of Gujarat or Co-Operative Bank of Gujarat (operating in India having branch at Ahmedabad/Gandhinagar) as per the G.R. no.

FD/MSM/e-file/4/2024/2859/DMO dated 1st May 2025 issued by Finance Department or further instruction issued by Finance department time to time. (The draft of Performance Bank Guarantee is as per Section 10).

3.23.2 The Performance Security shall be in the form of Bank Guarantee valid till 9 months from the date of contract expiry.

3.23.3 The proceeds of the performance security shall be payable to the GIL as compensation for any loss resulting from the Service provider's failure to complete its obligations under the Contract.

3.23.4 The Performance Security will be discharged by GIL and returned to the Bidder on completion of the bidder's performance obligations under the contract.

3.23.5 In the event of any contract amendment, the bidder shall, within 21 days of receipt of such amendment, furnish the amendment to the Performance Security, rendering the same valid for the duration of the Contract, as amended for further period.

3.23.6 No interest shall be payable on the Performance Bank Guarantee amount. GIL/Department may invoke the above bank guarantee for any kind of recoveries, in case; the recoveries from the bidder exceed the amount payable to the bidder.

3.23.7 The Performance Security may be forfeited by the Authority in the event of any breach or negligence or non-observance of any terms and conditions of the Agreement or for unsatisfactory performance by the Selected Bidder. The Performance Security shall be appropriated by the Authority as liquidated damages attributable to the breach or negligence or non-observance of any terms/ conditions of the Agreement by the Selected Bidder.

3.23.8 The Performance Security shall be forfeited in case the bidder withdraws his competency from the work before or after his tender is accepted & the tenderer does not complete the Contract documents.

3.23.9 Upon expiry of the Agreement Period, such portion of the Performance Security as may be considered by the Authority as sufficient to cover any incorrect or excess payments made on the bills to the Selected Bidder shall be retained until the final audit report on the account of the Selected Bidder's bill has been received and examined.

3.23.10 If the Selected Bidder fails to provide the Performance Security within the period specified in the RFP, such failure shall constitute a breach on the part of the Selected Bidder and the Authority shall be entitled to make other arrangements at the risk, cost, and expense of the Selected Bidder and/or forfeit the EMD.

3.24 Termination Clause

3.24.1 Termination by the TENDERER:

The TENDERER, reserves the right to suspend any of the services and/or terminate this

3.24.1.1 The bidder becomes the subject of bankruptcy, insolvency, and winding up, receivership proceedings;

3.24.1.2 In case the TENDERER finds illegal use of hardware, software tools, manpower etc. that are dedicated to the project;

3.24.1.3 If SLAs are not maintained properly and not provide services as per SLAs, then TENDERER has right to foreclose contract.

3.24.1.4 If deductions on account of penalties & liquidated damages exceeds more than 10% of the total contract price.

3.24.1.5 In case the selected Bidder fails to deliver the quantity and/or service as stipulated in the delivery schedule, the Tenderer reserves the right to procure the same or similar product from alternate sources at the risk, cost and responsibility of the selected Bidder.

3.24.1.6 Upon occurrence of an event of default as set out in Clause above, either party will deliver a default notice in writing to the other party which shall specify the event of default and give the other party an opportunity to correct the default.

3.24.1.7 Upon expiry of notice period unless the party receiving the default notice remedied the default, the party giving the default notice may terminate the Agreement.

3.24.1.8 During the notice period, both parties shall, save as otherwise provided therein, continue to perform their respective obligations under this Agreement and shall not, whether by act of omission or commission impede or otherwise interfere with party's endeavour to remedy the default which gave rise to the commencement of such notice period.

3.24.1.9 The termination hereof shall not affect any accrued right or liability of either Party nor affect the operation of the provisions of the Contract that are expressly or by implication intended to come into or continue in force on or after such termination.

3.24.1.10 In case of termination bidder will be paid for the work/services already delivered till the date of termination after deduction of penalties, if any.

3.24.1.11 In Case of termination of the bidder, the GIL/the Department of Forest shall forfeit the bank guarantee (performance security) and may blacklist the bidder and/or the OEM.

3.24.2 Consequences of Termination:

3.24.2.1 In the event of termination of the Contract due to any cause whatsoever, [whether consequent to the stipulated term of the Contract or otherwise], Purchaser shall be entitled to impose any such obligations and conditions and issue any clarifications as may be necessary to ensure an efficient transition and effective business continuity of the Service(s) which the Vendor shall be obliged to comply with and take all available steps to minimize loss resulting from that termination/breach, and further allow the next successor Vendor to take over the obligations of the erstwhile Vendor in relation to the execution/continued execution of the scope of the Contract.

3.24.2.2 Nothing herein shall restrict the right of Purchaser to invoke the Purchaser Guarantee and other guarantees and pursue such other rights and/or remedies that may be available Purchaser under law or otherwise.

3.24.2.3 The termination hereof shall not affect any accrued right or liability of either Party nor affect the operation of the provisions of the Contract that are expressly or by implication intended to come into or continue in force on or after such termination.

3.25 Indemnification

Selected agency will defend and/or settle any claims against the TENDERER that allege that Bidder service and/or branded product as supplied under this contract infringes the intellectual property rights of a third party. Selected agency will rely on Customer's prompt notification of the claim and cooperation with our defence. Bidder may modify the product or service to be non-infringing and materially equivalent or we may procure a license. If these options are not available, we will refund to Customer the amount paid for the affected product in the first year or the depreciated value thereafter or, for support services, the balance of any pre-paid amount or, for professional services, the amount paid. Bidder is not responsible for claims resulting from any unauthorized use of the products or services. This section shall also apply to deliverables identified as such in the relevant Support Material except that Bidder is not responsible for claims resulting from deliverables content or design provided by Customer.

3.26 Limitation of Liability

Selected agency's cumulative liability for its obligations under the contract shall not exceed the value of the charges payable by the TENDERER within the remaining duration of the contract term from the day claim is raised.

3.27 Confidentiality

3.26.1. Selected agency understands and agrees that all materials and information marked and identified by the TENDERER as 'Confidential' are valuable assets of the TENDERER and are to be considered as proprietary information and property. Selected agency will treat all confidential materials and information provided by the TENDERER with the highest degree of care necessary to ensure that unauthorized disclosure does not occur. Selected agency will not use or disclose any materials or information provided by tenderer without its prior written permission.

3.27.2. Selected agency shall not be liable for disclosure or use of any materials or information provided by the TENDERER or developed by selected agency which is:

3.27.2.1. Possessed by selected agency prior to receipt from the TENDERER, other than through prior disclosure by the TENDERER, as documented by selected agency's written records;

3.27.2.2. Published or available to the public otherwise than through a breach of Confidentiality; or

3.27.2.3. Obtained by selected agency from a third party with a valid right to make such disclosure, provided that said third party is not under a confidentiality obligation to the TENDERER; or

3.27.2.4. Developed independently by the selected agency.

3.27.3. If selected agency is required by judicial or administrative process to disclose any information or materials required to be held confidential hereunder, selected agency shall promptly notify the TENDERER and allow reasonable time to oppose such process before making disclosure.

3.27.4. Selected agency understands and agrees that any use or dissemination of information in violation of this Confidentiality Clause will cause the TENDERER

irreparable harm, may leave the TENDERER with no adequate remedy at law and the TENDERER is entitled to seek to injunctive relief.

3.27.5. The TENDERER does not follow the practice of asking Confidential Information of selected agency, however if any confidential information is required/shared by the selected agency then selected agency must clearly marked it as “Strictly confidential.” The TENDERER in turn will not share the same without prior concern of the selected agency.

3.27.6. Above mentioned “confidentiality clause” shall be applicable on both the parties i.e., the TENDERER and the successful bidder.

3.28 Service Terms

3.28.1. The bidder shall provide and share regular reports used to monitor the Hosted environment.

3.28.2. The SLAs will be used to evaluate the performance of the services on Monthly basis.

3.28.3. Payment to the successful bidder will be impacted by the penalty levied for non-performance as per SLA requirements.

3.28.4. It is mandatory for Bidder to allocate a spokesperson and share the contact details with the department to facilitate them with day-to-day activity and helping them in maintaining the services.

3.28.5. The Bidder is responsible to maintain documentation on the progress of the work and will have to update the same on regular basis. Bidder will have to submit the progress reports regularly, as per the guidelines issued by TENDERER from time-to-time.

3.28.6. The bidder shall ensure that security measures, policies and procedures implemented are adequate to protect and maintain the confidentiality of the Confidential Information. Bidder also agrees and acknowledges that it shall adhere to reasonable security practices over all sensitive personal information of the said project as prescribed by various rules under I.T. Act, 2000 (as amended from time to time).

3.29 Fraudulent and Corrupt Practices

3.29.1. Fraudulent practice means a misrepresentation of facts to influence a procurement process or the execution of a Contract and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive the TENDERER of the benefits of free and open competition.

3.29.2. “Corrupt Practice” means the offering, giving, receiving, or soliciting of anything of value, pressurizing to influence the action of a public official in the process of Contract execution.

3.29.3. The TENDERER will reject a proposal for award and may forfeit the EMD and/or Performance Bank Guarantee if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for, or in executing, contract(s).

3.30 Non-Disclosure Agreement (NDA)

The agency shall sign a mutually agreed Non-Disclosure Agreement (NDA) with the TENDERER at the time of deployment. The format of NDA proposed to be signed shall be as per the Annexure. A copy of the signed NDA shall be provided to the agency by the TENDERER for record keeping / reference purpose.

3.31 Copyright and Intellectual Property Rights

3.31.1. The TENDERER shall be entitled to all intellectual property and other proprietary rights including, but not limited to, patents, copyrights, and trademarks, with regard to products, processes, inventions, ideas, know-how, or documents and other materials which the Bidder has developed for the performance of services under this RFP and which bear a direct relation to or are produced or prepared or collected in consequence of, or during the course of, the performance of services under this RFP, and the Bidder acknowledges and agrees that such products, documents and other materials constitute works made for hire for the TENDERER.

3.31.2. At the request of TENDERER, the Bidder shall take all necessary steps, execute all necessary documents and generally assist in securing all such proprietary rights and transferring or licensing them to the TENDERER in compliance with the requirements of the applicable law and this RFP.

3.31.3. All IPR in relation to project documents, assets, resources, designs, drawings, estimates, recommendations, source codes, application, etc. shall vest with the TENDERER, and the bidder shall not use any such for any other purpose.

3.32 Approvals/Clearances

3.32.1. Necessary approvals/ clearances concerned authorities, for establishing the proposed project needs to be obtained by the selected agency.

3.32.2. Necessary approvals/ clearances from concerned authorities, as required, for fire protection, government duties / taxes need to be obtained by the selected bidder.

3.33 Period of Contract and Extension of Work

The Contract will be signed with the successful bidder initially for a period of 05 (Five) years. At the end of the contract duration, i.e., 05 (Five) years, performance of the selected bidder may be reviewed, and the contract may be extended on mutually agreement by two (02) years or more, as per the terms and conditions specified in this bid documents.

3.34 Subcontracting or Outsourcing

Sub-letting/contracting of entire work or in part thereof is not permitted.

3.35 Consortium

The Bidder may be a single entity or a group of at maximum of 2 (two) entities (the “Consortium”), coming together to implement the project. However, no Bidder applying individually or as a member of a consortium, as the case may be, can be member of another bid for the project. In the event of such an occurrence (i.e., if the bidder / consortium member is part of consortium of more than 1 bid), all such bids, shall be summarily rejected. The term ‘Bidder’ used herein would apply to

both a single entity and a Consortium. In case the Bidder is a Consortium, it shall comply with the following requirements:

3.35.1 The maximum number of members that shall be allowed to form a consortium for the purpose of this RFP must not exceed 2 (two), including the lead bidder. In the event of such an occurrence (i.e., if the consortium members are more than 2 (two), the bid, shall be summarily rejected.

3.35.2 The Proposal should include a description of the roles and responsibilities of individual members of the consortium, particularly with reference to technical, financial, operational and maintenance obligations. The Proposal should contain all the required information for each member of the consortium.

3.35.3 The Members of the Consortium shall enter into a joint bidding agreement for the purpose of submitting a proposal. The Joint Bidding Agreement, to be submitted along with the Proposal, shall, inter alia:

i. Clearly outline the proposed roles and responsibilities, if any, of each member.

ii. Undertake that the Lead bidder of the consortium shall hold the highest share in the consortium for the entire duration of the project.

iii. Include a statement to the effect that the lead member all members of the consortium shall be liable for all obligations in relation to the project for the entire contract period or such extended term as may be mutually agreed.

iv. Except as provided under this RFP and the bidding documents, there shall not be any amendment to the Joint Bidding Agreement without the prior written consent of the user Department and GIL.

v. If any member of consortium (other than lead bidder) becomes insolvent or by any other reasons becomes unable to perform its part of contract, it will be the duty of the lead bidder to perform the task assigned to such consortium member.

vi. If the lead bidder becomes insolvent during the contract period, then the competent authority will have the right to entrust project task to remaining members of the consortium by changing the roles and responsibilities of the consortium members as per mutual agreement.

3.35.4 Change in the composition of a consortium will not be permitted during the Selection Process or if selected, during contract period, including implementation and operation of the Project throughout the contract period or extended term of the contract.

3.35.5 In case a bid is being placed by is a consortium, then the term bidder as used in this RFP, shall include each member of such consortium.

3.36 Use of Agreement Documents and Information

3.36.1. The Bidder shall not without prior written consent from TENDERER disclose the Agreement or any provision thereof or any specification, plans, drawings, pattern, samples, or information furnished by or on behalf of TENDERER in connection therewith to any person other than the person employed by the Bidder in the performance of the Agreement. Disclosure to any such employee shall be

made in confidence and shall extend only as far as may be necessary for such performance.

3.36.2. The Bidder shall not without prior written consent of TENDERER make use of any document or information made available for the project except for purposes of performing the Agreement.

3.36.3. All project related documents issued by TENDERER other than the Agreement itself shall remain the property of TENDERER and Originals and all copies shall be returned to TENDERER on completion of the Bidder's performance under the Agreement, if so, required by the TENDERER.

3.37 Transition & Exit Management

3.37.1 The exit management period starts, in case of expiry of Agreement, on the date when the Agreement comes to an end or in case of termination of Agreement, on the date when notice of termination is sent to the System Integrator. The exit management period ends on the date agreed upon by the parties (User Department & System Integrator) or 2 months after the beginning of the exit management period, whichever is earlier.

3.37.2 Exit Management Plan: The agency shall provide the user department with a recommended exit management plan ("Exit Management Plan") as a deliverable of the Project. The Plan shall be required to be approved by the user department. In relation to the Contract as a whole and in relation to Project Implementation, and the Operation & Management SLA, the plan shall deal with at least the following aspects of exit management.:

3.37.2.1 A detailed program of the transfer process that could be used in conjunction with a Replacement of agency including details of the means to be used to ensure continuing provision of the maintenance services throughout the transfer process or until the cessation of the services and of the management structure to be used during the transfer.

3.37.2.2 The Exit management plan should include protocol for transfer of Assets (including hardware / Software / Active or passive components/ furniture etc.), layouts, diagrams, schematics, documentations, manuals, catalogues, archive data, IP addressing, Live data, policy documents or any other material related to the project.

3.37.2.3 Plans for the communication with such of the agency sub-contractors, staff, suppliers, customers and any related third party as are necessary to avoid any material detrimental impact on the project operations as a result of undertaking the transfer.

3.37.2.4 Plans for provision of contingent support to user department, and Replacement agency for a reasonable period after transfer.

3.37.2.5 The Exit management plan should also include detailed process on knowledge transfer to user department or nominated agency or selected new agency.

3.37.2.6 The agency shall re-draft the Exit Management Plan annually thereafter to ensure that it is kept relevant and up to date.

3.37.2.7 Each Exit Management Plan shall be presented by the agency to user department and the same, if found fit for purpose, shall be approved by user department or its nominated agencies.

3.37.2.8 In the event of termination or expiry of SLA, Project Implementation, Operation and Management SLA or Scope of Work each Party shall comply with the Exit Management Plan.

3.37.2.9 During the exit management period, the agency shall use its best efforts to deliver the services.

3.37.2.10 This Exit Management plan shall be furnished in writing to user department or its nominated agencies within 3 months from the Effective Date of contract agreement.

3.37.3 The user department shall be entitled to serve notice in writing on the agency at any time during the exit management period as detailed hereinabove requiring the agency to provide user department with a complete and up to date list of the complete Assets/inventory.

3.37.4 Before the expiry of the exit management period, agency shall handover all the Infrastructure, IT hardware, software, mobile application, licenses, access codes, digital assets and reports to the user department and deliver entire database, logs, process documents, policies, relevant records, manuals, source code, reports and other documents pertaining to the Project and/or all operation and maintenance records and manuals pertaining thereto and existing/in possession of the agency or its team as on date. It is the responsibility of the agency to hand over the entire system of the project in working/operational condition.

3.37.5 Before the expiry of the exit management period, the agency shall return all the records stored to user department or its nominee.

3.37.6 The agency shall comply with all other requirements as may be prescribed under Applicable Laws to complete the assignment of all the rights, title and interest of the agency free from all Encumbrances absolutely and free of any charge or tax to user department or its nominee.

3.37.7 On request by the user department, the agency shall affect such assignments the user department may require in favor of the user department, in relation to any service, resource, equipment, maintenance or warranty service provision contract between implementing agency and third-party lessors, Agencies, and which are related to the services and reasonably necessary for the carrying out of replacement of services by the user department.

3.37.8 The responsibility shall lie with the agency for the smooth transition of services during the exit management period. The responsibility of the agency shall only cease upon the satisfaction of the user department.

3.37.9 The Successful Bidder shall be entitled to use the Assets for the duration of the exit management period.

3.37.10 The User Department during the operation and management phase shall be entitled to serve notice in writing to the bidder to provide user department or its nominated agencies with a complete and up-to-date list of the assets within 30 days of such notice

3.37.11 In the event, if the assets to be transferred to the user department is mortgaged to any financial institutions by the selected agency, the agency shall ensure that all such liens and liabilities have been cleared beyond any doubt, prior to such transfer. All documents / no-objection certificates regarding the discharge of

such lien and liabilities shall be furnished before the user department or its nominated agencies.

3.37.12 All expenses occurred during transfer of assets shall be borne by the selected vendor/newly selected bidder.

3.37.13 That on the expiry of this clause, the bidder and any individual assigned for the performance of the services under this clause shall handover or cause to be handed over all confidential information and all other related material in its possession, including the entire established infrastructure, to the user department.

3.37.14 At any time during the exit management period, the agency will be obliged to provide an access of information to user department, and/or any Replacement agency in order to make an inventory of the Assets (including hardware / Software / Active or passive components/ furniture etc.), layouts, diagrams, schematics, documentations, manuals, catalogues, archive data, IP addressing, Live data, policy documents or any other material related to the project.

3.37.15 The User department will promptly on the commencement of the exit management period, supply to user department or its nominated agencies the following:

3.37.15.1 Information relating to the current services rendered and performance data relating to the performance of the services; Documentation relating to project, Project's Intellectual Property Rights; any other data and confidential information related to the project; All current and updated Project data as is reasonably required for purposes of the Project or for transitioning of the services to its Replacement Successful Bidder in a readily available format.

3.37.15.2 All other information (including but not limited to documents, records and agreements) relating to the services reasonably necessary to enable Purchaser and its nominated agencies, or its Replacement agency to carry out due diligence in order to transition the provision of the Services to Purchaser or its nominated agencies, or its Replacement agency (as the case may be).

3.37.16 Promptly on reasonable request at any time during the exit management period, the agency shall, subject to applicable laws, restraints and regulations (including in particular those relating to privacy) provide to the user department a list of all employees (with job titles and communication address) of the agency, dedicated to providing the services at the commencement of the exit management period.

3.37.17 To the extent that any Transfer Regulation does not apply to any employee of the existing agency, New selected bidder may make an offer of employment or contract for services to such employee of the existing agency and the existing agency shall not enforce or impose any contractual provision that would prevent any such employee from being hired by any new selected bidder.

3.37.18 All the working equipment's and movable infrastructure will be transferred in the name of user department as highlighted above and the new agency will have the complete responsibility of delivering the service as per RFP.

3.37.19 The agency will have to undertake exit management and transition of the project to user department / new selected agency or bidder in accordance with the following conditions when the project comes to an end by way of project schedule or termination:

3.37.19.1 Upon receipt of order of termination or when nearing project completion, the agency shall prepare a detailed transition and exit management plan for asset, knowledge digital or physical assets/resources and get written approval from Purchaser on the same. The tentative timelines for the Exit and Transition Management are as follows:

Phase	**Timeline; T = Receipt of order of termination or 3 months prior to project completion**	**Responsibility of operations**
Transition & Exit Management Phase	1st month after notice	Agency selected through the RFP
Handholding Phase	2nd and 3rd months after notice	User Department / new Agency or bidder

3.37.20 The agency shall handover the peaceful possession of Project Assets to the Department within 30 days of the date of expiry or termination of the contract. The agency shall clear all liens and liabilities before transfer of such assets. In case of expiry of contract period, the agency shall initiate the exit activity at least 6 months prior to the validity of the contract period.

3.37.21 Payment to the outgoing agency shall be made to the tune of last set of completed activities till end of transition period, subject to SLA requirements.

3.37.22 All the existing infrastructure of the project, which will be handed over to successful bidder is a property of the user department. All the new products/services supplied by successful bidder (agency) will become a property of the user department after the Termination of the contract without making any additional payment to the ongoing agency.

3.37.23 In case of contract being terminated by the user department, it reserves the right to ask ongoing agency to continue running the project operations for a period of 6 months after termination orders are issued by the user department. The agency shall promptly provide access to, and copies of all information held or controlled by them which they have prepared or maintained in accordance with the Agreement relating to any material aspect of the services (whether provided by the agency or OEMs / suppliers appointed by the agency). The user department shall be entitled to a copy of all such information. Such information shall include details pertaining to the services rendered and other performance data. The agency shall permit user department and/or any Replacement agency to have reasonable access to its employees and facilities as reasonably required by the user department to understand the methods of delivery of the services employed by the agency and to assist appropriate knowledge transfer.

3.37.24 The agency shall handhold the employees of user department / new agency to ensure successful handover, transition and take-up of operations during the transition phase and if required 1 month beyond the last date of the transition period once the operations have been formally handed over to the user department / new agency. The agency shall not be paid for resources, assets or use thereof or resources during this period i.e., once operations are handed over to user department / new agency.

3.37.25 All the additional equipment fitted or installed equipment’s either handed over by the user department or supplied by the agency will become a property of the user department without making any additional payment to the agency.

3.37.26 The purchaser may forfeit the Performance Bank Guarantee of the agency in case, the bidder:

Fails to comply with the exit policy.
Delays in handover activities.
Retention of resources or data.

3.37.27 The purchaser holds the right to engage a third-party auditor to validate the handover process and ensure all contractual obligations are met.

3.38 Taxes & Duties

Bidder is liable for all taxes and duties etc. as may be applicable from time to time.

SECTION – 4

4 SCOPE OF WORK

4.1 Objective

Gujarat's forest presents a mix of environmental challenges and proactive conservation efforts. Gujarat's forest cover remains limited, and while efforts to increase green cover and manage forest resources are ongoing, challenges persist, particularly regarding habitat management and wildlife protection.

Department of Forest, Government of Gujarat, endeavors to have a balance in environmental conservation and economic development. To implement proper mitigation and/ or adaptation policy under the sustainability goals, a strong statistic is required to understand the present state of forest land. This can be achieved with proper harness of technologies like AI&ML, remote sensing and other IoT sensors etc.

Accepting the need to protect biodiversity while supporting economic development, the Gujarat Forest Department is in course to onboard an agency to address the challenges in forest conservation by leveraging advanced technologies.

Under this initiative, the selected agency shall implement a decision support system (DSS) using interoperable data analytics, visualization, and real-time monitoring to meet the main objectives as below:

a. Sustainable Resource Management: Ensuring sustainable use of forest resources by monitoring net primary productivity, forest biomass and carbon stocks. -.
b. Monitoring mangrove health and providing coral bleaching alerts
c. Monitoring active forest fire and providing dynamic spatial forest fire risk forewarning
d. Community and Stakeholder Engagement: Integrating local communities in conservation efforts through initiatives like agroforestry and mangrove restoration, aligning with the state’s carbon credit strategy.

The Agency will be responsible for delivering a digital platform that integrates various data sources, including satellite imagery, drone surveys, Edge Devices and ground-truth data. The scope encompasses:

a. Data Analytics and Visualization: The platform will offer real-time visualization of forest conditions, biodiversity health, and human impact. Advanced data analytics, machine learning (ML), and artificial intelligence (AI) tools will support species mapping, forest boundary delineation, and habitat analysis.
b. Remote Sensing and GIS Applications: High-resolution satellite imagery and multispectral data will allow for accurate mapping of forest cover, species diversity, and environmental changes. Remote sensing, combined with Geographic Information Systems (GIS), will facilitate continuous monitoring of forest dynamics, helping the department make informed conservation decisions.
c. Field Data Collection and Community Participation: Field surveys and mobile apps will enable ground-trothing and validation of remote sensing data. Additionally, community engagement is a critical component; by involving local communities in tree planting and mangrove restoration projects, the department can increase carbon sequestration and support local economies.
d. Management Information Systems (MIS) and Decision Support Dashboards: The project will include the development of dashboards that present forest cover changes, wildlife tracking, scenario generation and resource use in a visual format. MIS and visual dashboards will assist officials and stakeholders make better decisions and prioritization, improve efficiency, and gain clear insights.

Verticals of Forest Department:

1. Forest - Information on recorded forest area of the state.

2. Wildlife – Information on the Protected Areas (PAs) like National Parks, Sanctuaries etc.
3. Social Forestry – Information on the afforestation in outside of the forest areas.

Deliverables: (Forest)

1. Status of Recorded Forest Area (RFA) of the State – Reserved forests, protected forests, unclassified forests. (District wise, Division wise, Taluka wise, Range wise, etc.)
2. Status of Forest Cover in RFA and outside of the RFA (District wise, Division wise, Taluka wise, Range wise, etc.) – Degraded forests (Scrub) – Less than 0.1 canopy density, Open Forests – More than 0.1 and less than 0.4 canopy density, moderately dense forest -more than 0.4 to 0.7 canopy density, very dense forest – more than 0.7 canopy density. (Methodology of FSI Dehradun to be adopted)
3. Monitoring of the plantations (Mobile app-based uploading of KML Files). The monitoring of the plantations will be done on sampling basis and output would be as per the guidelines of Standing Order No.8. With minimum 90% (+ / - 5%) accuracy.
4. Status of change detection and regular monitoring.
5. To develop forest patrolling application and integration with this new system to monitor patrolling by staff.
6. Uploading of Coupe Maps & management plan maps.

Deliverables: (Wildlife)

1. Digitized areas of National Parks, Wildlife Sanctuaries, Conservation Reserves, Eco-sensitive zones, etc.
2. Wildlife habitat changes detection of National Parks, Wildlife Sanctuaries, Conservation reserves, Eco-sensitive zones, etc.
3. Integration of e-Gujforest and any other third-party database for wildlife related reporting.
4. Status of Rescue centers, veterinary hospitals, breeding centers etc.
5. Status of Eco-tourism sites and its integration with existing application.

Deliverables: (Social Forestry)

1. Status of Tree Cover outside forest area (TOF) (District wise, Division wise, Taluka wise, Range wise, etc.) – Protected forests, Gram Van, Road side plantation, Lake / canal side plantation, Van Kavach, Sanskrutik Van, NAMO Van, Pavitra Upvan, Panchvati, Urban Forest etc.
2. Monitoring of the departmental plantation and agroforestry (Mobile app-based uploading of KML Files). The monitoring of the plantations will be done on sampling basis and output would be as per the guidelines of Standing Order No.8. with minimum 90% (+ / - 5%) accuracy.
3. Status of Nurseries, Van Chetna Kendra, Van Kutir, Panchvati sites and its integration with existing application.

Deliverables: (Mangroves)

1. Status of the existing Mangrove cover of Gujarat state in different density classes (District Wise)
2. Status of existing mangrove cover in notified forest areas of Gujarat state in different density classes (District wise / Division wise)
3. Monitoring including validation (Using drone) of the Mangrove plantations (Mobile app-based uploading of KML Files). The monitoring of the plantations will be done on sampling basis and output would be as per the guidelines of Standing Order No.8. With minimum 90% (+ / - 5%) accuracy.

4.2 Broader Scope

The selected agency shall be responsible for design, build, implement, deploy host and maintain an Innovative, Integrated and User-Friendly solution, enabling the department for benchmarking, validated data through ground truthing and advanced data processing methods to address environmental challenges, monitor resource health, and optimize

conservation strategies in real time.

Scope of agency to implement the solution.

The Agency will be responsible for delivering a digital platform that integrates various data sources, including satellite imagery, drone surveys, IoT sensors, ground-truth data and edge devices. The scope encompasses:

Sr	Particulars	Scope
1	Data Collection	**Utilization of high-resolution satellite data**: 3-meter resolution satellite imagery, 0.3-meter resolution satellite imagery. A centralized data base repository of all the including high resolution satellite data, Drone survey data, IoT, Geo-Tagged field surveyed ground truth data and ancillary attributes. **Weather Data Parameters:** The bidder must provide data on key weather parameters; Temperature, Humidity, Precipitation, wind speed and Direction, Solar Radiation ET rates, Soil moisture Content, and Atmospheric Pressure. Uniform data format of all structured and unstructured data. Collection positional data points at regular intervals.
2	Survey	Flying Unmanned Aerial Vehicle (UAV) over the project area of Nursery plantation, Forest area and mangroves to acquire Aerial Imagery RGB and LiDAR Sensors for Drone Survey annually throughout the project tenure Continuous GT Survey supporting to spatial data analysis
3	Data Analytics	Provide Data Analytics & Visualization based Decision Support System for Planning, any remediation to restore the species coverage and its related advisories and write ups.
4	Web Platform	The integrated digital platform should have the capability to provide dashboards and required reports to monitor the overall performance of the project aggregate from the cluster level to the overall program level. The solution should have the ability to generate automated alerts based on various events or parameters and to send the automated notification through SMS / Emails to the targeted recipients. The web platform must have Geo-Mapping and Visual Data Representation capabilities. The web platform must have Geo-Mapping and Visual Data Representation capabilities, and shall feature a user-friendly graphical user interface (GUI) with multilingual support (Gujarati and English). The platform must incorporate robust computer security measures, including secure authentication, role-based access control, data encryption in transit and at rest, and protection against common cyber threats, to ensure the confidentiality, integrity, and availability of project data.

5	Mobile	Mobile application that allows surveyors to record, upload, and geotag field data in real time. Both Android and iOS
6	Integrated Command and Control Centre	Setup Integrated Command and Control Centre (ICCC) for enhance monitoring, resource management, disaster response, biodiversity conservation, community engagement, and informed decision-making.
7	Check Post Monitoring	Monitoring forest check posts through CCTV surveillance already established by the tenderer.
7	Reports, Documents, Presentation etc.	The agency shall submit detail documentation on SRS, HLD with solution & architecture design, LLD detailed service descriptions and specifications, DFD, UI Interface, Test Plan, Deployment Plan, and operation & maintenance for the entire contract period covering Change Control, Patch management, Updates& Upgrades,supports,etc. The Agency shall make a time to time (Weekly, Fortnightly, Monthly, as on-demand) presentation with milestone completion and project status to the authority and other stakeholders.
8	Training and Capacity Building	For training, capacity building and knowledge sharing for the department official a learning management system is to be developed. The agency is expected to conduct detailed training to all identified users before FAT. Comprehensive FAT has to be conducted by the agency and corresponding sign-off should be obtained from the User Department on successful completion. Post-Successful FAT, the agency shall provide trainings to designated staffs of user department.
9	Operation and Maintenance	Application support includes, but not limited to, production monitoring, troubleshooting, and addressing the functionality, availability, and performance issues, implementing the system change requests etc. The agency shall keep the application software in good working order; perform changes and upgrades to applications as requested by the forest department.

4.3 Detailed Scope of Work

The selected agency shall be responsible for design, build, implement, deploy host and maintain an Innovative, Integrated and User-Friendly solution, enabling the department for benchmarking, validated data through ground truthing and advanced data processing methods to address environmental challenges, monitor resource health, and optimize conservation strategies in real time.

This proposed Integrated Digital Platform will serve as a unified back-end system, offering both domain-specific and common services through standard APIs. These interfaces will help quickly develop applications by combining different services. The Forest Monitoring and Management 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 scope of work shall include, but not limited to detailed below:

1. The selected bidder or selected MSI referred to as “Agency” in this document shall conduct detailed requirements study, design, build, deploy, host and maintain an Integrated Digital platform, hosted at State Data Centre, that will serve as a dynamic Forest Monitoring and Management suite with multiple applications (the applications that would be built by the selected agency and the other third party / existing applications that needs to be plugged with the Digital Platform by selected agency), System Software needed to host applications and other components as listed in this document. The selected agency will also build necessary channels like the Web Portal, Mobile Applications, ICCC, etc.

2. The agency shall submit detail documentation on System Requirement Study, High Level Design for all components, LLD detailed service descriptions and specifications, DFD, UI Interface, Test Plan, Deployment Plan with required infrastructure and sizing to host and operation & maintenance for the entire contract period covering Change Control, Patch management, Updates & Upgrades, supports, etc.

3. The agency shall be entirely responsible for implementation the solution which satisfies all features, functions and performance as described in this document.

4. The agency shall deploy the solution according to industry best practices and benchmark the solution against market standards to ensure it meets or exceeds performance and quality expectations.

5. 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. The solution should also facilitate with API’s / Sockets / SDK’s for integration with existing applications of the state and central government. Bidder has to integration of existing forest IT application/ all schemes / IT initiative / Digital Applications.

6. The solution should be provisioned with a centralized data base repository for all kind of data including high resolution satellite data, Drone survey data, IoT’s Data, field ground truth data.

7. The agency shall be responsible for acquiring multi-spectral satellite imagery with resolution of 3m and 0.3m to monitor Forests, Nursery plantations, Mangroves and others. Output of the forest map generated by the satellite image should be very precise and accurate within the acceptable of 80% or more.

   CORS Correction Requirement

   All positional data derived from satellite imagery, UAV surveys, or other remote sensing sources shall be processed using CORS (Continuously Operating Reference Stations) correction or equivalent GNSS post-processing methods to achieve the specified horizontal and vertical positional accuracy. The bidder shall ensure that the final georeferenced outputs are aligned with ground control points to enable accurate spatial analysis, temporal change detection, and integration with existing GIS datasets.

8. The solution should provide Data Analytics & Visualization based Decision Support System for Planning any remediation to restore the species coverage and its related advisories and write-ups.

9. The developed web and mobile application should have strong authentication and security features and should maintain security rights and privileges through an Integrated Management Solution. The solution should support authentication through

OTP, OTP on email.

10. The solution should not allow concurrent sessions for same user on same or other device and the application should support workflow management system in which all the departmental activities/approvals should be integrated.

11. The solution must comply with all the relevant standards & policies of the Government related with e-Governance application development.

12. MIS dashboard and real-time reporting with ability to drill-down Geographically and demographically for the mangroves and Corals coverage and other details use spatial and GIS data.

13. The solution should have the ability to generate automated alerts based on various events or parameters and to send the automated notification through SMS / Emails to the targeted recipients.

14. During implementation, the agency shall deploy and engage their qualified resources and arrange for necessary setup off-site with their own expense for data collection, developing, Integration, Testing and FAT. After successful FAT, the complete solution shall be hosted at Gujarat State Data Centre for stabilization and Operation & Maintenance.

15. The agency shall be responsible for Supply, Install, configure, maintain all required Hardware's, Software's, Tools, Licenses, API's, connectivity, etc. with appropriate size to host the solution. The agency shall also be responsible to upgrade.

16. The agency shall support to integrate the third-party applications developed for the department in IT Platform and those application will integrate with API to access the masters and data sets.

17. The agency shall setup Integrated Command and Control Centre (ICCC) at designated place for enhance monitoring, resource management, disaster response, biodiversity conservation, community engagement, and informed decision-making.
18. The agency shall also be responsible for required redundant network connectivity and Internet for the solution and augmenting the disaster recovery capacity.

19. The Agency shall ensure that all deployed components (such as: hardware, software, tools, etc.) should not be declared End of Life (EoL) and End-of-Software Support (EoSS) EOL during the contract period. However, if for reasons beyond the control of OEM/Agency, the EoL/EoSS dates are declared by the OEM for the delivered product during the contract period and if those dates are prior to the date of end of contract period, the agency has to arrange for the replacement of the component before EoL/EoSS with equivalent or higher specifications (working in user departments environment) which should not reach EoL/EoSS for the remaining duration of the contract at no extra cost to the user department and GIL.

20. The Agency shall make a time to time (Weekly, Fortnightly, Monthly, as on-demand) presentation with milestone completion and project status to the department authority and other stakeholders.

21. The agency shall also be responsible for supply & management of all performance management tools for measuring performance of Digital platform.

22. The agency is expected to conduct detailed training to all identified users before FAT. Comprehensive FAT has to be conducted by the agency and corresponding sign-off should be obtained from the User Department on successful completion. Post-Successful FAT, the agency shall provide trainings to designated staffs of user department for day to day access and operation.

23. After FAT, the agency shall fix all the bugs, mitigate all vulnerabilities, fine tune and optimize the performance during stabilization period.

24. The agency is required to get the solution certified by designated agency of GOG or any CERT-IN empaneled agencies agency before rolling out the application in Production environment.

25. The agency should adhere to robust security measures to protect sensitive data of the Forest Department and meet the compliance with relevant data protection and privacy regulations. The agency shall also be responsible to get the solution audited by Cert-In empaneled agencies on every six months during the contract period after Go-live.

26. The agency shall design the training material for End User Training and Development of Online Training modules. Provide training to the users on the use of portals, applications, new business processes and other identified modules.

27. Operation and Maintenance: Application support includes, but not limited to, production monitoring, troubleshooting, and addressing the functionality, availability, and performance issues, implementing the system change requests etc. The agency shall keep the application software in good working order; perform changes and upgrades to applications as requested by the forest department.

28. The agency shall be responsible to deploy appropriate tool to monitor the performance of all components deployed to complete the Solution as per RFP. The agency shall submit system generated reports on the performance and adherence to the SLA.

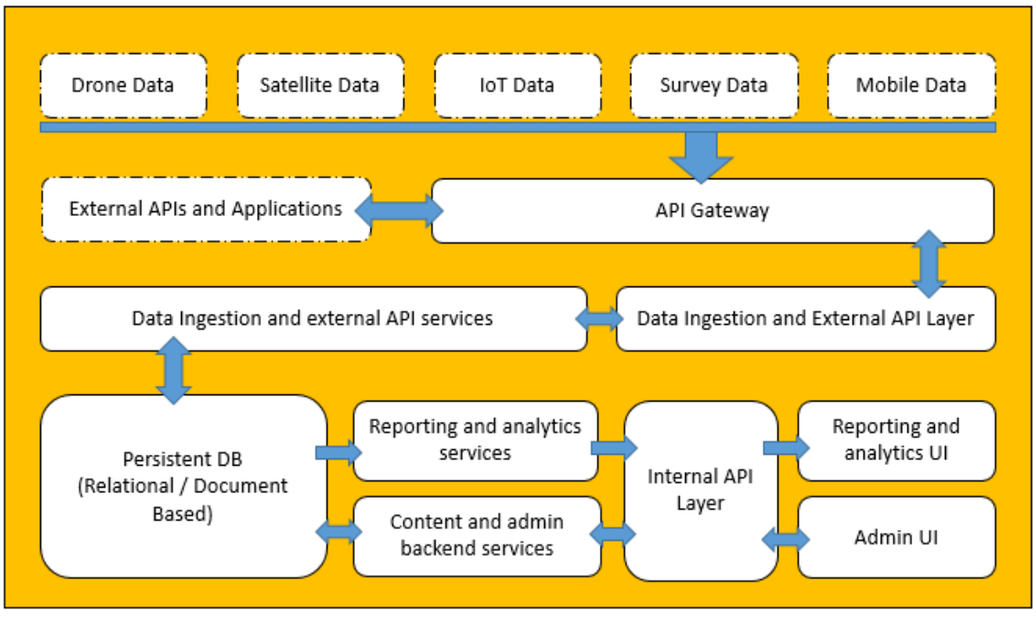

Fig:1 Indicative Architecture of the Platform

1. **Data Sources (Drone, Satellite, IoT, Survey & Mobile Data)**

   These heterogeneous inputs feed the system with geospatial imagery (drone/satellite), real-time sensor streams (IoT), field-survey measurements and user-generated reports (mobile). Each source varies in resolution, frequency and format, so the first step is to normalize and timestamp them for downstream processing. Together they provide the multi-scale, multi-modal coverage needed for comprehensive forest monitoring.

2. **External APIs and Applications**

   Third-party platforms (e.g. weather services, land-registry systems or partner portals) both push data into and pull insights from your system. They integrate via well-documented REST or gRPC interfaces, allowing you to enrich your own datasets or expose analytics to external stakeholders.

3. **API Gateway**

   The gateway is the unified entry point for all external and mobile clients, handling authentication, rate-limiting, SSL termination and request routing. It enforces security policies (OAuth, API keys) and forwards valid calls to the appropriate ingestion or internal API layer.

4. **Data Ingestion & External API Layer**

   This layer sits immediately behind the API Gateway and standardizes incoming payloads and performs functions like validating schemas, enriching metadata (e.g. geohash, time-zones) and batching or throttling high-volume streams. It encapsulates all the “edge” logic needed before data lands in your core pipelines.

5. **Data Ingestion & External API Services**

   Here reside the actual microservices and ETL jobs, message queues, streaming engines or functions that deserialize, transform, deduplicate and persist data. These services ensure reliability (ack-retries, dead-letter queues) and can horizontally scale to absorb spikes in sensor or API traffic.

6. **Persistent Database (Relational / Document-Based)**

   A hybrid datastore strategy for reliability and scale: relational tables for transactional metadata (user, project, event logs) and document or time-series stores for large, semi-structured payloads (satellite tiles, IoT time-series). ACID guarantees on the relational side ensure consistency, while NoSQL shards or TTL collections help you manage volume and retention.

7. **Reporting & Analytics Services**

   These back-end services run batch or interactive queries, aggregations, spatial joins, change-detection algorithms and machine-learning inference against the persistent store. They expose processed results (e.g. deforestation alerts, canopy-health indices) via APIs or push summaries into cache layers for fast retrieval.

8. **Content & Admin Backend Services**

   This set of services manages system configuration, user roles/permissions, project definitions and static content (map styles, help text). It also provides admin-only endpoints for system health checks, audit logs and manual data corrections.

9. **Internal API Layer**

   The internal API layer abstracts and secures all business logic for your front-end applications. It composes calls to reporting, ingestion and admin services into coarse-grained endpoints, enforcing RBAC and input validation before returning JSON (or GeoJSON) payloads.

10. **Reporting & Analytics UI**

    A rich web dashboard or mobile interface that visualizes maps, time-series plots, alerts and custom reports. It calls the internal API layer to fetch pre-computed analytics and offers interactive filters (date ranges, regions, sensor types) for ad-hoc exploration.

11. **Admin UI**

A restricted-access console for system operators to manage users, configure data-source credentials, review ingestion logs and monitor service health. It interacts with the Content & Admin Backend and internal APIs to provide real-time status and control over the entire platform.

The solution shall comprise of below major components:

4.3.1 Data Procurement and collection

4.3.1.1 Utilization of high-resolution satellite data

a. Using high-resolution satellite data having the resolution of 3m and SARm to monitor Forest, Nursery plantation as well as mangroves can offer a comprehensive approach to understand the dynamics and health of new plantation at nursery, Trees as well as for Mangroves.

b. Hence such high-resolution data is expected to be used by the bidder to provide high accuracy results to cover the scope of work mentioned in the RFP.

c. Acquire high-resolution satellite imagery from platforms which offer frequent revisit rates and high spatial resolution.

d. Preprocess satellite imagery to correct for atmospheric effects, sensor noise, and geometric distortions to ensure data accuracy and reliability. Documentation on the analysis ready data (ARD) preparation should be maintained.

e. Maintain versions of the datasets and metadata standards of the satellite imageries and GIS database for traceability and seamless usage in multiple applications.

f. Use high-resolution satellite data to map and classify forest and mangrove vegetation types, species composition, and it’s spatial distribution.

g. Other satellite data is also motivated to be used by the bidder like SAR data if high resolution satellite image provider does not suffice the requirement of some instance like cloud cover.

h. Employ supervised or unsupervised classification algorithms, such as object-based image analysis (OBIA) or machine learning techniques, to differentiate between various species within forest as well at mangrove sites and land cover classes.

i. Utilize time-series analysis of high-resolution satellite imagery to monitor changes in forest and mangrove extent, fragmentation, and land cover dynamics over time.

j. Identify areas of forest and mangrove loss, degradation, or encroachment, as well as patterns of regeneration and natural succession.

k. Analyze spectral indices derived from high-resolution satellite data to assess forest trees, new plantation at nursery and mangrove health indicators such as vegetation vigor, biomass, and chlorophyll content.

l. Identify and monitor disturbances and threats to forest and mangrove ecosystems, including deforestation, urbanization, pollution, and natural disasters, using high-resolution satellite imagery.

m. Integrate high-resolution satellite data and its analytics with geographic information systems (GIS) and spatial modeling techniques to analyze and visualize spatial patterns, trends, and hotspots of forest plantation, disturbances and mangrove dynamics.

n. All the data must be imbibed into platform mentioned in the RFP.

o. Validate satellite-derived forest and mangrove maps and classifications through ground truthing surveys, field data collection, and validation points to achieve maximum accuracy.

p. Conduct field-based assessments of forest trees and plantation and mangrove structure, species composition, and ecological attributes to validate remote sensing products and improve accuracy.

q. It is expected that the bidder will provides valuable insights into forest trees and plantation and mangrove ecosystems' status, trends, and drivers of change, thereby informing evidence-based decision-making and promoting effective conservation and sustainable management practices.

1. **Data Specifications and Frequency**:

   a. 3-meter resolution satellite imagery: To be provided, covering the entire forest area of Gujarat having multispectral channels (VIS, NIR and SWIR).

   b. 0.3-meter resolution satellite imagery: To be provided, covering priority forest areas as identified by the Forest Department having multispectral channels. Department will provide first time satellite data post which procurement will be done as per this RFP.

   c. Bidder also needs to procure 10m Satellite Imagery (Open Source) for continuous monitoring of the forest area (Optional).

   d. Tenderer will provide 5-meter or above spatial resolution data through ISRO which may be utilized.

2. **Applications and Objectives of Data**:

   a. Forest type classification and species mapping to aid in understanding and preserving biodiversity.

   b. Delineation of forest boundaries to support land management and protection efforts.

   c. Forest cover mapping to assess deforestation, degradation, and afforestation initiatives.

   d. Mangrove mapping in coastal areas to monitor and protect these critical ecosystems.

   e. Additional mapping, modelling scenarios and other analysis requirements as may arise, including forest health assessments and habitat studies.

3. **Data Delivery**:

a. Data must be delivered in an open source format compatible with GIS and remote sensing software used by the Forest Department or customized application developed by the bidder.

b. Imagery should be geo-referenced, orthorectified, and pre-processed to eliminate atmospheric, radiometric and geometric distortions.

c. Timely delivery according to the agreed-upon schedule is essential, with a provision for additional ad-hoc data acquisition if required by the Forest Department.

4. **Data Accuracy and Quality**:

a. The imagery provided should meet industry standards for spatial and spectral accuracy to support detailed analysis.

b. Data should be free from cloud cover or with minimal interference, ensuring usability for mapping and monitoring purposes.

5. **Technical Support and Documentation**:

a. The bidder must provide technical support for data integration, handling, and interpretation.

b. Documentation detailing the data acquisition process, pre-processing steps, algorithms used and quality assurance measures employed should accompany each data delivery.

6. **Compliance and Data Confidentiality**:

a. The bidder must comply with any legal and regulatory guidelines governing the collection and distribution of high-resolution satellite imagery in India.

b. All data and insights derived from it will remain the intellectual property of the Forest Department of Gujarat, and confidentiality must be maintained at all stages.

7. Utilization of data:

- The bidder must use these data sets to deliver the detail scope of work mentioned in the RFP.

Bidders are required to demonstrate prior experience in providing high-resolution satellite imagery for environmental, forestry, or similar applications and should include examples or case studies relevant to this scope.

4.3.1.2 Weather data

The Agency is required to supply and harmonize accurate, high-resolution weather data for the Forest Department of Gujarat, supporting various forestry applications as outlined below:

a. The bidder must ensure high data accuracy, with minimal error margins for each weather parameter.
b. The data must be validated against recognized standards and benchmarks for environmental data, ensuring reliability for scientific and analytical use.

Data Specifications:

a. **Weather Data Parameters**: The bidder must provide data on key weather parameters, including but not limited to:
    - Temperature (minimum, maximum, and average)
    - Humidity (relative and absolute)
    - Precipitation (rainfall levels, type, and distribution)
    - Wind Speed and Direction
    - Solar Radiation and Evapotranspiration Rates
    - Soil Moisture Content and Atmospheric Pressure

b. **Climatic Data**: The bidder must collate and provide long term average climatic data, derived bioclimatic parameters, and future climatic projections (as adopted by IPCC, e.g. CMIP6 model projections), available freely (e.g. https://www.worldclim.org), in best possible downscaled spatial resolutions from best possible sources:
    - Bioclimatic 19 Variables (Annual Mean Temperature, Mean Diurnal Range, Isothermality, Temperature Seasonality, Max Temperature of Warmest Month, Min Temperature of Coldest Month, Temperature Annual Range, Mean Temperature of Wettest Quarter, Mean Temperature of Driest Quarter, Mean Temperature of Warmest Quarter, Mean Temperature of Coldest Quarter, Annual Precipitation, Precipitation of Wettest Month, Precipitation of Driest Month, Precipitation Seasonality, Precipitation of Wettest Quarter, Precipitation of Driest Quarter)

The climatic and bioclimatic data will be used for habitat modelling, generating climate change impact scenarios, predictive modelling and climatically informed decision making.

c. **Data Resolution and Frequency**:
    - **Spatial Resolution**: Weather and climate data must cover the entire forest area of Gujarat, with high spatial resolution for localized analysis.
    - **Temporal Frequency**: Weather data should be updated daily and include historical climatic data (minimum of 10 to 20 years) to support long-term studies and analysis.

4.3.1.3 Structured & unstructured data by department.

a. The bidder will be providing all the available secondary data, structured-unstructured data to the bidder for the scope of work deliverables.
b. All the data need to be analyzed by the bidder and to be made available in digitized format on the web portal.

All these data sets can be utilized by the bidder for further analysis of the forest area wherever required.

4.3.2 Survey

4.3.2.1 Drone survey

a. The Agency shall be responsible for obtaining necessary clearances/permissions from Local authority and other applicable agencies as needed for flying Unmanned Aerial Vehicle (UAV) over the project area of Nursery plantation, Forest area and mangroves or Corals to acquire Aerial Imagery. Necessary administrative support will be provided by Authority.
b. Department will assist in the process to obtain necessary clearance with all the required documents limited to the scope of work.

Components	Description

Coverage area	1% of Approx. 19,000 Sq. Km (tile size)
Pixel size /Resolution	10 cm or better
Flight Height	Not more than 300 ft.
Camera Sensor	20 megapixels and above (preferably having Visible – Blue, Green, Red and Near InfraRed bands)
Photography condition	Image must auto-correct, be free of fog, haze, dust; image shall preferably be taken in clutter free and stable camera position.
Overlapping	80 % forward overlap and 70 % side overlap

c. The Agency shall perform following Image processing and Ortho- rectification activities to process the aerial imagery acquired using UAV:
    - Pre-processing and Ortho rectification of imagery.
    - Pre-processing of acquired images.
    - Digital surface models, digital terrain models generation.
    - Ortho-rectification of Satellite Images.
d. The Ground Control Points Established and the DEM created should be used for Ortho-rectification of imagery:
    - Mosaicking and Creating Tiles
    - Image strips shall be mosaicked for contiguity during the Ortho-rectification process.
    - Color balancing shall be done for the images to achieve homogeneity across stripe boundaries.
    - Generation of Image Tiles
e. Following features are to be captures:
    - Transport network, land use, water bodies, forest coverage
f. Ortho-Mosaic: The Agency shall generate True-Ortho Mosaic of the identified Area of Interest (AoI) using the below inputs:
    - Digital imagery (raw High-Resolution Images) received from multiple sources.
    - Digital Elevation Model (DEM).
    - Exterior orientation parameters from aerial triangulation or Inertial Measurement Unit (IMU).
g. All features shall be labelled properly, and labels shall not be overlapped.
h. Other than the final deliverables listed below, all raw/ intermediate data and reports shall also be part of deliverables:

S No	Product/ Deliverable	Format
Ortho-Mosaic Data		
1	Ortho-Mosaic Image	GEOTIFF & JPEG (with world file, .jpw)
2	Tiled Ortho-Mosaic Image	GEOTIFF & JPEG (with world file, .jpw)
3	Seam lines	GIS File Format
4	QA/QC Assessment Report	PDF / Excel File

4.3.2.2 Specifications for RGB and LiDAR Sensors for Drone Survey

The RGB/Multispectral and LiDAR sensors specified here are intended for high-accuracy drone surveys for forest cover change detection, mangrove, coral monitoring, and

biomass estimation. The sensors should capture detailed imagery and precise elevation data to support environmental analysis and decision-making.

a. **Frequency**

The Bidder has to do the survey using optical sensor drone mounted, twice every year, whereas for LiDAR sensor- drone mounted is to be used three times throughout the project period.

b. RGB Sensor Specifications

- Resolution: Minimum of 20 megapixels or higher to ensure high image clarity and capture fine details in forest and vegetation structure.
- Dynamic Range: Minimum 12-bit dynamic range to provide accurate color and detail in high-contrast lighting conditions, especially in areas with varying canopy cover.
- Frame Rate: 1-2 frames per second for high-quality image capture during drone movement, supporting overlap requirements in large survey areas.

c. Lens Specifications

- Focal Length: Adjustable focal length between 24-35mm to cover different altitudes and field of view requirements.
- Aperture: f/2.8 or lower to allow better light capture in low-light or dense canopy conditions.
- Image Overlap Requirement:
- Forward Overlap: At least 80% forward overlap between images to ensure continuous and seamless mapping of survey areas.
- Side Overlap: At least 70% side overlap for better stereoscopic analysis and alignment in image stitching.
- Shutter Type: Global shutter to avoid motion blur during flight and ensure high-quality image integrity across frames.

d. LiDAR Sensor Specifications

- Accuracy: Vertical accuracy of ±5 cm and horizontal accuracy of ±10 cm
- Point Density: Minimum 100 points per square meter to capture detailed elevation data, enabling the identification of tree heights, canopy structure, and ground features in dense forest areas.
- Range: Effective range of 100-200 meters, allowing the sensor to capture data at higher altitudes and over larger survey areas.
- Field of View: 360-degree field of view to maximize area coverage with a single sensor, reducing the need for multiple flight paths.
- Laser Wavelength: 905 nm or 1550 nm, depending on vegetation type and survey requirements, to penetrate dense canopy and capture ground elevations accurately.
- Pulse Repetition Frequency (PRF): Minimum 200 kHz, providing high point density and detailed terrain mapping, especially in dense forest regions.
- Scan Rate: Adjustable scan rate between 10-50 Hz to ensure high-quality data capture across different terrains.

e. Environmental Operating Conditions:

- Temperature Range: Operable in a range of -10°C to 45°C, supporting usage in various environmental conditions.
- Humidity Resistance: Resistant to humidity levels up to 90%, essential for applications in mangrove and coastal forest environments.

f. Integration and Compatibility

- Data Compatibility: Sensor outputs should be compatible with GIS and remote sensing software, including formats such as LAS/LAZ for LiDAR and GeoTIFF /JPEG for RGB images.
- Sensor Synchronization: Both RGB and LiDAR sensors should be integrated with Inertial Measurement Units (IMU) and GPS to ensure accurate geo-referencing and alignment of imagery with elevation data.
- Power Requirements: Sensors should be optimized for drone power supply (12-24V DC) to maximize flight duration and survey coverage.

g. Deliverables and Testing

- Calibration and Testing Report: A detailed calibration report for each sensor before deployment, documenting accuracy, and performance benchmarks.
- Sample Data Collection: Sample data from a test survey to validate sensor resolution, overlap, and accuracy requirements.
- Maintenance and Support: Include maintenance documentation and support for troubleshooting sensor issues and updates as required.

4.3.2.3 Ground Truth data: Continuous Survey

The Agency is required to conduct Ground Truth Surveys throughout the project tenure for the Forest Department of Gujarat, supporting detailed forestry applications as specified. Additionally, the bidder will develop a mobile application module with this feature and in web platform for monitoring and managing survey activities in real time.

1. **Survey Objectives**: The Ground Truth Survey will be conducted to support:
    - **Forest Type Classification and Species Mapping**: Collecting in-field data to validate and enhance mapping of forest types and species distribution.
    - **Delineation of Forest Boundaries**: Providing accurate, field-verified boundary data to prevent encroachment and manage protected areas.
    - **Forest Cover Monitoring**: Assessing forest cover conditions and verifying changes detected through remote sensing.
    - **Mangrove Mapping**: Field verification of mangrove boundaries and health in coastal areas.
    - **Additional Survey Requirements**: Supporting any ad-hoc mapping and analytical needs that may arise, such as habitat assessment or forest health studies.

2. **Survey Specifications:**

a. **Data Collection Parameters**:

- **Attributes**: Data collection should include GPS coordinates, forest type, species information, canopy density, height, soil type, and other relevant environmental characteristics.
- **Accuracy**: Field data must have high positional accuracy, with a target of ±5 meters.
- **Coverage**: Survey coverage should encompass all forest types, protected areas, and sensitive regions as designated by the Forest Department.

b. Survey Frequency:

- Data collection will be ongoing, with periodic field visits scheduled based on seasonal needs, priority areas, or any specific requests from the Forest Department.

3. Monitoring System Development:

- **Mobile Application**:
  - The bidder will develop this module in a mobile application that allows surveyors to record, upload, and geotag field data in real time.
  - **Features**:
    - GPS-enabled data capture with anti-spoofing solutions for precise geolocation of survey points.
    - In-field data entry forms for forest type, species, canopy cover, and other attributes.
    - Offline functionality for data collection in remote areas with later synchronization when connectivity is available.
    - Real-time geo-tagged photo capture and upload functionality for visual documentation.
- **Web Application**:
  - The bidder will also develop a module in a web platform for Forest Department officials to monitor, manage, and analyze survey data.
  - **Features**:
    - Dashboard with real-time status of survey activities, locations visited, and data collected.
    - Mapping interface to view survey points, track survey progress, and analyze spatial patterns.
    - Data export and reporting tools for integration with GIS and remote sensing platforms.
    - User management features to control access and permissions.

4. **Data Delivery and Integration:**

a. Data Format:

- Collected survey data should be compatible with GIS software, preferably provided in formats such as shapefiles (.shp), CSV, or geo-referenced TIFF.

b. Integration with Remote Sensing Data:

- Ground truth data must be integrated with remote sensing imagery for validation, calibration, and enhanced analysis. The web platform should support data comparison and layering of remote sensing data with ground truth points.

4.3.3 Data Analytics

4.3.3.1 Forest Type and Species Mapping

Forest Types viz., Evergreen, Semi-evergreen, Moist Deciduous, Dry deciduous, Teak Forest and their spatial distribution over a period shall be mapped using multi-temporal satellite remote sensing-based vegetation indices.

Tree species identification or classification shall also be done. The bidder needs to apply supervised or unsupervised classification algorithms to segment the imagery into distinct land cover and land use classes. Incorporate spectral indices (e.g., NDVI, NDWI, etc.) and texture measures to enhance discrimination between different forest types.

Utilize machine learning or deep learning approaches for more advanced classification and species-specific mapping. Refine classification results using post-classification techniques such as object-based image analysis (OBIA) or expert knowledge.

Develop species-specific spectral signatures or models based on known species distributions and ground truth data. Employ techniques such as spectral unmixing or decision tree classification to identify and map individual tree species within the forest cover.

Integrate the ancillary data sources, such as Satellite/Drone based canopy height models or environmental variables, to improve species discrimination and mapping accuracy.

a. Accuracy Validation

Validate the accuracy of the classified maps and species predictions using independent ground truth data.

Calculate error matrices and accuracy metrics (e.g., overall accuracy, producer's accuracy, user's accuracy, kappa coefficient) to quantify the performance of the mapping algorithms. Identify the areas of uncertainty or misclassification and investigate potential sources of error.

b. Maps Generation

Generate thematic maps displaying the spatial distribution of forest types and tree species within the study area.

Create informative visualizations, including color-coded maps, species abundance charts, and spatial overlays, to communicate the mapping results effectively. Provide metadata and legends to facilitate interpretation of the maps by end-users and stakeholders.

To comprehensively cover Forest Trees/Plantation Counting and Monitoring using AI/ML-based Data Analytics in this project the scope could be divided into various phases and sub-tasks. This would help ensure the selection of a bidder who can deliver a precise, technologically advanced solution aligned with project goals. Here is a detailed scope but not limited to mentioned below:

c. Data Acquisition and Integration

Satellite Imagery and Remote Sensing: Use high-resolution satellite imagery and LiDAR data to capture forest and plantation areas. Specify requirements for spatial and temporal resolution to ensure accurate tree counting.

Drone Surveys: Define drone capabilities for high-accuracy, low-altitude imagery acquisition over forest areas, especially in dense and remote regions.

PhenoMet, IoT and Ground Sensors: Outline the deployment of Phenological Cameras with Automatic Weather Stations (PhenoMet), IoT sensors to monitor growth parameters, soil moisture, and climate variables that impact tree health.

Data Sources Integration: Ensure seamless integration of multi-source data, such as historical forestry data, biodiversity records, and other environmental datasets.

d. AI/ML-Driven Tree and Plantation Counting

Automated Detection and Counting: Develop AI algorithms for tree detection and tree counting using object recognition and deep learning models on satellite and drone imagery.

Species Identification: Employ machine learning models to distinguish tree species, possibly using high resolution (multispectral / hyperspectral) satellite or aerial data to identify species-specific spectral signatures.

Density and Spatial Distribution Mapping: Specify AI-based clustering techniques to map tree density and spatial distribution across varying topographies and forest types.

Seasonal Monitoring for Growth Trends: Implement algorithms that uses time-series data to analyze seasonal growth, phenology, detect trends in tree health and shift in phenological patterns.

Using sophisticated remote sensing tools: Bidder can harness the Remote Sensing data/ GIS analytics to suggest / provide accurate tree plantation informatics.

Bidder is allowed to use any of the above tool to obtain best possible accuracy to achieve the scope mentioned in the RFP.

e. Health Monitoring and Biomass Estimation

Vegetation Health Indices: Use indices like NDVI (Normalized Difference Vegetation Index) and EVI (Enhanced Vegetation Index) to assess tree health. AI algorithms could be trained to identify stressed areas or early signs of disease.

Biomass and Carbon Stock Estimation: Define AI models for estimating biomass and carbon stock by incorporating tree height, diameter, and species information. ML models could refine these estimates using historical biomass data and ground truth measurements.

f. Change Detection and Encroachment Monitoring

Change Detection Algorithms: AI models to detect changes in forest cover, including deforestation, degradation, and land-use changes, based on comparative analysis of multi-temporal satellite images.

Encroachment Alerts: Real-time monitoring of protected areas for encroachment detection. ML algorithms should distinguish natural changes from human activities such as illegal logging, agriculture, or construction.

g. Mapping and Visualization

Thematic Mapping: AI-generated thematic maps displaying species distribution, tree density, and health status. Include GIS overlays for soil type, altitude, and water sources.

Real-time Dashboards: Develop interactive dashboards to visualize real-time monitoring data, alerts, and key metrics on tree count, health, biomass, and encroachment events.

h. Predictive Analytics and Forecasting

Tree Growth Predictions: Implement Forest growth models that use historical data to forecast tree growth patterns and health. These predictions can guide reforestation and resource allocation efforts.

Impact Assessment of Climate Variables: Predict the impact of climate conditions (e.g., temperature, rainfall) on plantation health using AI models that correlate environmental data with tree growth and survival rates.

Carbon Stock Projections: Forecast potential carbon sequestration rates based on current biomass and reforestation efforts, contributing to carbon credit strategies.

Forest Fire Behavior: Forecast and generate fire spread scenario based on meteorological, topographical, existing fire lines and forest fuel load parameters.

i. Accuracy Validation and Field Verification

Ground Truthing: Outline methods for field validation of AI-generated data, specifying protocols for sampling and measuring tree parameters to assess the model's accuracy.

Error Analysis: Require the use of error metrics (e.g., confusion matrix, accuracy score) to quantify model performance in tree counting and health assessment.

Refinement and retraining of AI Models: Specify the process for retraining models as new data becomes available to maintain accuracy and reliability over time.

j. Capacity Building and Knowledge Transfer

Training Modules: Specify a series of workshops and hands-on training sessions for department officials to understand the AI/ML models and use the data analytics platform.

Documentation: Include detailed technical documentation covering AI/ML methodologies, data sources, integration processes, and software usage guidelines.

k. Reporting and Compliance

Periodic Reports: Define report types (e.g., quarterly, annual) on forest health, biomass, carbon stock, and encroachment, delivered in formats like PDF, Excel, and GIS-compatible formats.

Regulatory Compliance: Ensure the project aligns with legal requirements, such as biodiversity protection laws, carbon credit regulations, and data privacy standards.

l. Solution Deployment

The agency shall be responsible for supply, installation, testing and implementation of all required components to host the solution at GSDC. The agency shall also be responsible to deploy all required components at edge locations within Gujarat.

The agency adheres to all the privacy and compliance of GSDC during host the solution.

The agency shall also be responsible for maintaining disaster recover site ensuring zero data loss.

The agency shall submit Escalation Matrix with details of team members and their roles and responsibilities. The bidder shall submit the Updated escalation matrix on need basis in case there are any changes.

The agency will have to follow mandatory guidelines published time to time by GOI (e.g. NeSDA Framework, Accessibility friendly, GIGW , STQC certified application and product, etc.).

The proposed solution should be able to integrate with state level integrations such as WhatsApp, SSO, etc. (if applicable, license cost extra) as and when required without any extra cost. WhatsApp recurring charges will be paid by tenderer. Any E-governance guideline issued by the state needs to be adhered time to time.

m. Maintenance and Support

Continuous Model Improvement: Require ongoing updates to AI/ML algorithms to improve model precision and adapt to changing forest conditions.

Technical Support and Troubleshooting: Specify a support team to handle data discrepancies, model inaccuracies, and integration issues.

4.3.3.2 Delineation of Legal Forest Boundaries

1. Delineating legal forest boundaries involves a combination of legal, administrative, and technical processes to establish clear and enforceable limits for forested areas.
2. Hybrid approach of boundary mapping using existing cadastral maps and recent satellite images.
3. The bidder with the help of the department needs to identify the legal forest type classification including tree cover density as well as the protected areas.
4. The bidder will have to carry out the field verification and Ground Truthing exercise to verify and validate the existing boundary data, legal descriptions and Cadastral Maps.
5. Collect DGPS coordinates (from the department), physical landmarks, and geospatial data points to accurately delineate the boundaries on the ground. Document field observations, boundary markers, and any discrepancies between legal documents and actual land use.
6. The bidder must use Remote Sensing and Geospatial Analysis to further delineate the forest boundaries as per the latest Satellite Imagery and land use patterns within the study area.
7. Employ Geographic Information Systems (GIS) and spatial analysis tools to integrate remote sensing data with legal cadastral maps, land tenure records, and administrative boundaries. Apply image classification techniques and land cover classification algorithms to distinguish forested areas from other land cover types. Incorporate digital elevation models (DEMs) and terrain analysis to account for

topographic features and landscape variations in the boundary delineation process.

8. Integrate field survey data, remote sensing outputs, and cadastral information into a unified geospatial database or GIS platform.

9. Install physical boundary markers, signs, or monuments at key points along the forest boundaries to demarcate the limits of legal jurisdiction and control. Ensure that boundary markers are visible, durable, and compliant with legal standards and regulations. Maintain and periodically inspect boundary markers to prevent encroachment, illegal logging, and land disputes.

4.3.3.3 Detection and Mapping of Forest Encroachment

1. Detecting and mapping forest encroachment involves identifying unauthorized activities such as agriculture expansion, illegal logging, infrastructure development, and urbanization within forested areas.

2. Forest Encroachment includes illicit cutting, encroachment (permanent clearance for agriculture) also other interferences like quarrying and illicit felling of forestland directly or indirectly affect the area. Multidate satellite data in reference with legal GIS boundaries can be used to monitor any kind of encroachment in forest limits immediately.

3. The bidder needs to obtain high-resolution satellite imagery with suitable temporal and spatial resolutions for detecting changes in forest cover over time. Consider using multispectral or optical imagery, as well as synthetic aperture radar (SAR) data for all-weather and day-night monitoring.

4. Implement change detection algorithms to compare multiple image dates and identify areas of significant land cover change. Utilize techniques such as image differencing, vegetation indices differencing, and classification-based change detection.

5. Set appropriate thresholds and change detection criteria to distinguish between natural forest dynamics and human-induced changes associated with encroachment.

6. The bidder needs to apply supervised or unsupervised classification algorithms to segment the imagery into different land cover classes, including forest, non-forest, and encroached areas. Incorporate spectral indices, texture measures, and ancillary data (e.g., elevation, slope, proximity to roads) to improve classification accuracy and discrimination of encroachment features.

7. Perform object-based image analysis to delineate and characterize encroachment features based on spatial and contextual information. Define segmentation parameters and object features to identify encroachment patches, clusters, and spatial patterns within the forested landscape.

8. Validate the accuracy of detected changes through ground truth data collection, including field surveys, GPS ground control points, and high-resolution aerial imagery.

9. Conduct accuracy assessment using error matrices, confusion matrices, and statistical metrics to quantify the performance of the change detection algorithm.

10. Generate thematic maps displaying the spatial distribution and extent of forest encroachment within the study area. Classify encroachment types and land use changes (e.g., agriculture, urban expansion, infrastructure development) based on spectral signatures and spatial patterns identified in the imagery.

11. Incorporate additional data layers, such as Revenue Information, cadastral

information, to contextualize and validate the encroachment mapping results.

12. Analyze historical satellite imagery to identify long-term trends and spatial patterns of forest encroachment over multiple time periods. Evaluate the drivers and underlying causes of encroachment, including socio-economic factors, policy changes, and land tenure dynamics.

13. Conduct spatial analysis to identify hotspots of forest encroachment, including areas with high rates of change, recurrent disturbances, and vulnerable ecosystems. This would help the department in prioritizing monitoring and intervention efforts in critical areas where encroachment poses the greatest threat to forest conservation and biodiversity conservation.

4.3.3.4 Forest Fire Mapping

1 The widespread changes in forest cover caused by climatologically and anthropogenic factors can influence the forest ecosystem and climate system to a great extent. With the increasing availability of remote sensing data, monitoring of forest changes at high temporal resolution and on various scales can be done. Department can get the overall idea about ongoing Forest Fires (especially in Summer) and their spatial distribution.

2 The bidder needs to implement fire detection algorithms to automatically identify active fire hotspots and thermal anomalies in the satellite imagery. Utilize threshold-based approaches, contextual algorithms, normalized burn ratio (NBR) or temperature difference methods, to detect fire pixels based on their spectral characteristics and temperature signatures. Incorporate machine learning or deep learning techniques for more advanced fire detection and classification, especially in complex terrain or heterogeneous landscapes.

3 Define fire perimeters and boundaries by aggregating detected fire hotspots and thermal anomalies over time. Apply spatial clustering algorithms or morphological operations to group neighboring fire pixels and delineate the spatial extent of the fire-affected area. Generate fire perimeter polygons or raster masks representing the burned area boundaries for mapping and analysis.

4 Quantify the severity of the fire-affected areas using spectral indices, such as the normalized difference vegetation index (NDVI) or the enhanced vegetation index (EVI), before and after the fire event. Calculate burn severity indices, such as the differenced normalized burn ratio (dNBR) or the normalized difference water index (NDWI), to assess changes in vegetation health and fire damage. Classify fire severity levels (e.g., low severity, moderate severity, high severity) based on threshold values and ecological indicators derived from remote sensing data.

5 Generate thematic maps displaying the spatial distribution of active fires, burned areas, and fire severity levels within the study area. Create visualizations, including false-color composites, color-coded maps, and time-series animations, to illustrate the progression of the fire event and its impact on the landscape. Incorporate ancillary data layers, such as topography, land cover, and infrastructure, to contextualize the fire mapping results and assess the vulnerability of adjacent areas.

6 Validate the accuracy of the fire mapping results using ground truth data collected through field surveys, or high-resolution satellite imagery or drone-based imagery.

7 Conduct error matrix analysis and statistical assessments to quantify the accuracy of fire detection and mapping algorithms, including measures of omission and commission errors.

8 Integrate fire mapping outputs with early warning systems and decision support tools to provide timely alerts and actionable information to emergency responders, forest officers, and residents.

9 Monitor post-fire vegetation recovery and ecosystem dynamics using repeat satellite imagery and time-series analysis techniques. Assess the effectiveness of post-fire rehabilitation and restoration measures in mitigating erosion, preventing invasive species colonization, and promoting ecosystem resilience.

4.3.3.5 Deforestation Mapping

1 Mapping deforestation involves the use of remote sensing and geographic information systems (GIS) techniques to identify, quantify, and monitor changes in forest cover over time. Identifying deforestation, degradation and forest disturbance areas at different spatial and temporal scales could provide useful information for sustainable managements of forests, define proper polices and strategies, implementation plans and addressing the real issues of deforestation.

2 The bidder needs to implement change detection algorithms to compare pairs of satellite images from different time periods and identify areas where forest cover has changed. Utilize techniques such as image differencing, vegetation indices differencing (e.g., NDVI), and spectral mixture analysis to detect changes in vegetation cover.

3 Classify the satellite imagery into different land cover/land use categories using supervised or unsupervised classification techniques. Define classes such as forest, non-forest, agriculture, urban, and water bodies to distinguish between different land cover types. Incorporate ancillary data such as elevation, slope, and proximity to roads to improve classification accuracy and discrimination of land cover classes.

4 Identify areas of deforestation by comparing the classified land cover maps from different time periods. Define deforestation as the conversion of forested areas to non-forest land cover types (e.g., agriculture, urbanization). Calculate the extent and rate of deforestation by quantifying the area of forest loss over time.

5 Delineate the boundaries of deforested areas using spatial analysis techniques such as object-based image analysis (OBIA) or edge detection algorithms. Generate thematic maps and spatial datasets visualizing the spatial distribution and extent of deforestation within the study area. Create visualizations, including color-coded maps and time-series animations, to illustrate the progression of deforestation over time.

6 Validate the accuracy of the deforestation mapping results using ground truth data collected through field surveys or high-resolution aerial imagery. Conduct error matrix analysis and statistical assessments to quantify the accuracy of deforestation detection algorithms, including measures of omission and commission errors.

7 Analyze the underlying drivers and causes of deforestation, including agricultural expansion, logging, infrastructure development, and land tenure dynamics. Integrate socio-economic data and environmental indicators to identify factors contributing to deforestation and prioritize areas for intervention and conservation efforts.

8 Analyze historical deforestation trends and patterns using time-series satellite imagery and statistical modeling techniques. Identify hotspots of deforestation and areas experiencing accelerated rates of forest loss over time. Project future scenarios of deforestation risk and vulnerability based on historical trends and predictive modeling approaches.

4.3.3.6 Forest Cover Change Detection

The bidder needs to perform the forest cover change detection using the multi-temporal satellite datasets to discriminate areas of land cover change between dates of imaging.

Change detection analysis will help department in identifying the conservation priorities, rate of deforestation and quantification of overall forest cover loss at finer scale.

For Forest Cover Change Detection, the scope mentions comprehensive methodology for monitoring, analyzing, and reporting on changes in forest cover using advanced technologies. This scope includes multi-temporal analysis, AI-driven algorithms, and a structured reporting framework, allowing the forest department to gain actionable insights on deforestation, forest degradation, and reforestation activities. Below is an in-depth breakdown of the expected scope.

A. Data Acquisition and Preprocessing

Multi-Temporal Satellite Imagery: Specify the use of high-resolution satellite imagery. The data should cover multiple time points (e.g., monthly, quarterly, and annual) to track changes accurately over time.

Drone Imagery for High-Resolution Mapping: In areas with significant changes or high value, drones equipped with RGB and near-infrared (NIR), Red-Edge and/or Short-Wave Infrared (SWIR) sensors should be used for close-up, high-resolution imagery, especially in dense forest regions.

Data Preprocessing: Define preprocessing steps, including radiometric correction, geometric correction, and atmospheric correction, to ensure data consistency across different timeframes. This step is crucial for reliable change detection.

B. Change Detection Techniques

Spectral Index Analysis: Utilize vegetation indices such as NDVI (Normalized Difference Vegetation Index), EVI (Enhanced Vegetation Index), and SAVI (Soil-Adjusted Vegetation Index) to identify changes in forest health and density. These indices are essential for distinguishing forested areas from non-forested regions.

Image Differencing and Image Ratioing: Specify algorithms that use image differencing and ratioing to detect pixel-level changes between temporal images, which helps highlight areas of deforestation, degradation, and reforestation.

Machine Learning and Deep Learning Models: Implement AI models, including supervised and unsupervised classification techniques (e.g., random forest, support vector machine, or deep convolutional neural networks), for high-accuracy change detection. These models should be trained to classify land cover types, identify changes, and detect disturbances across forested landscapes.

Object-Based Image Analysis (OBIA): For more complex analysis, require the bidder to use OBIA techniques to classify and map forested vs. non-forested areas, incorporating spatial features like texture and shape. OBIA is particularly effective for detailed analysis in heterogeneous landscapes.

C. Deforestation and Degradation Monitoring

Deforestation Detection: Define a protocol for identifying areas where forest cover has been removed, specifying thresholds for classifying deforested zones. The process

should distinguish between natural changes (e.g., seasonal variations) and human-induced deforestation.

Forest Degradation Monitoring: Require tools to detect subtle signs of forest degradation, such as canopy thinning or selective logging, which do not result in complete deforestation but indicate a decline in forest quality.

Encroachment Detection: Define criteria for detecting encroachment by agriculture, infrastructure, or illegal logging, using GIS overlays of forest boundaries to flag unauthorized land use.

D. Mapping and Visualization

Thematic Change Maps: Develop high-resolution maps displaying areas of forest cover change, showing regions of deforestation, reforestation, and degradation. These maps should have legends, color coding, and scale bars to facilitate easy interpretation by stakeholders.

Hotspot Analysis: Require the creation of hotspot maps that highlight areas with frequent or accelerated forest cover change, helping prioritize conservation efforts.

Interactive Dashboards: Implement GIS-based interactive dashboards for real-time visualization of forest cover changes, allowing stakeholders to drill down by specific geographic areas, time periods, or forest types.

E. Time-Series Analysis and Trend Monitoring

Temporal Change Analysis: Establish time-series analysis for tracking changes over specific intervals (e.g., seasonal, annual) to understand long-term trends in forest cover. This could involve seasonal comparisons to identify cyclical patterns and discern natural forest dynamics from abnormal disturbances.

Trend Analysis and Projections: Develop trend analysis models that forecast future changes in forest cover based on historical data and patterns. This predictive capability can aid in planning and policy-making.

F. Early Warning System and Alerts

Real-Time Change Detection Alerts: Implement a system to provide real-time alerts on sudden or significant changes in forest cover, enabling timely interventions. These alerts should be customizable based on location and change type (e.g., deforestation vs. degradation).

Threshold-Based Alerts: Establish threshold values for various forest change metrics (e.g., percentage decrease in canopy cover) to automatically trigger alerts for rapid response to potential illegal activities or natural disturbances like fires or cyclones/storms.

G. Validation and Ground-Truthing

Field Validation Protocols: Specify a ground-truthing plan for validating remote sensing data with actual field measurements. This includes collecting GPS coordinates, species data, canopy cover, and other forest attributes.

Accuracy Assessment: Require an accuracy assessment of the AI models and remote sensing outputs, using confusion matrices, accuracy scores, and other statistical measures to evaluate the effectiveness of the change detection approach.

Regular Model Calibration: Outline the need for periodic recalibration of models to maintain accuracy, especially as environmental and climatic factors evolve over time.

H. Maintenance and Continuous Monitoring

Model Updates and Retraining: Require a plan for ongoing maintenance of AI/ML models, including regular retraining with new data to keep models accurate and responsive.

Post-Project Support: Specify requirements for post-project technical support, including troubleshooting, model adjustments, and assistance in data interpretation.

4.3.3.7 Above ground Biomass estimation

The bidder needs to perform the above ground biomass estimation through Geospatial and Remote Sensing techniques. Biomass is one of the biophysical parameters which can be extracted using satellite data. Rigorous Ground Truth information is required consisting of various parameters like Chlorophyll, DBH (Diameter at Breast Height) of trees, LAI (Leaf Area Index) FAPAR (Fraction of Photosynthetically Active Radiation), APAR (Absorbed Photosynthetically Active Radiation), Tree height etc.

Department can get biomass extracted from Remote Sensing imagery which can be used to determine the health of the trees & carbon with their spatial distribution.

In an RFP focusing on Above-Ground Biomass Estimation, the scope should cover a variety of components to ensure accurate measurement, monitoring, and analysis of biomass data, which is critical for forest management, carbon stock estimation, and ecological assessments. Here is a detailed breakdown of the expected scope:

A. Data Collection and Acquisition

- The high-resolution satellite imagery and Drone/LiDAR data must be used to capture vegetation height and structure.
- Drone Surveys: Drone-based data collection must be included equipped with RGB, multispectral, or LiDAR sensors for detailed imagery in targeted forest areas. Drone surveys can capture finer details, especially in dense or inaccessible regions.
- Field Sampling for Ground Truthing: Outline protocols for field sampling, including tree diameter at breast height (DBH), tree height, and species identification to validate remote sensing data. Ground-truth data will be essential for calibrating and validating biomass models.
- Ancillary Data Integration: Additional environmental data sources, such as soil type, rainfall, and elevation, which may impact biomass estimates must also be incorporated. This data can refine biomass estimation models by accounting for environmental factors.

B. Biomass Estimation Algorithms

- Remote Sensing and AI-Based Models: Define AI/ML algorithms that use spectral indices like NDVI (Normalized Difference Vegetation Index) and EVI (Enhanced Vegetation Index) to estimate biomass. Specify the use of machine learning techniques (e.g., regression analysis, random forest) to develop relationships between remote sensing data and biomass values.
- Allometric Models: Outline the use of species-specific allometric equations that relate tree measurements (e.g., DBH, height) to biomass. The models should be calibrated based on local species data to improve accuracy.

C. Carbon Stock and Sequestration Estimation

- Carbon Conversion Factors: Specify that the project should estimate carbon stock by applying carbon conversion factors to biomass estimates, based on standard guidelines and methodologies.
- Sequestration Rate Calculations: Include algorithms for calculating annual carbon sequestration rates to assess the forest's role in carbon capture. The bidder should estimate these rates by tracking changes in biomass over time.
- Comparative Analysis for Carbon Credit: For areas involved in carbon credit programs, the bidder should conduct periodic comparisons to provide carbon stock updates, which will help the department meet its carbon credit targets and climate objectives.

D. Change Detection and Biomass Monitoring

- Temporal Biomass Change Analysis: Implement change detection algorithms to monitor biomass changes over time, helping to detect growth, degradation, or deforestation. The analysis should compare multi-date satellite or drone imagery to detect increases or decreases in biomass.
- Disturbance Detection and Alerts: Use remote sensing to detect disturbances (e.g., logging, natural disasters) that may affect biomass. The bidder should develop an alert system for significant biomass reductions in protected or high-value areas.

  The system should be capable to log human-animal conflicts. Citizen should be able to notify on the system which should be visible on the MAP.
- Growth Rate Analysis: Calculate growth rates for different forest areas and tree species, considering age, environmental conditions, and species-specific growth patterns. This will enable forest managers to predict biomass increases over specific timeframes.

E. Mapping and Visualization

- Thematic Biomass Maps: Develop maps that display above-ground biomass density, spatial distribution, and carbon stock levels across different forest zones. Maps should be available at different resolutions for strategic and operational needs.
- Interactive Dashboards: Create a GIS-enabled dashboard for real-time biomass data visualization, allowing stakeholders to access and analyze biomass and carbon stock information across various timeframes and locations.

F. Predictive Modeling and Scenario Analysis

- Biomass and Carbon Forecasting: Implement predictive models that use historical and current biomass data to forecast future biomass and carbon stocks under different scenarios (e.g., conservation, reforestation, and logging scenarios).
- Impact of Climate Variables on Biomass: Develop models that predict how changes in climate variables (e.g., temperature, precipitation) could impact biomass growth and forest carbon stocks. This is essential for long-term planning and resilience building.
- Simulation of Conservation and Reforestation Scenarios: Using predictive models, the bidder should simulate scenarios that evaluate the impact of reforestation or conservation efforts on biomass accumulation and carbon sequestration over time.

G. Accuracy Validation and Calibration

- Ground Truth Validation: Specify a ground truthing protocol to validate model outputs with actual field measurements. This involves regular sampling and verification of DBH, height, and canopy cover in different forest zones.
- Error Metrics and Model Calibration: Require the bidder to use error metrics (e.g., RMSE, R^2) to quantify model accuracy and make necessary adjustments. Regular model calibration with new ground truth data will improve accuracy.
- Quality Assurance Reports: Provide standardized quality checks and monthly/quarterly reporting on data accuracy, errors, and corrective actions taken.

H. Training and Capacity Building

- Training Programs for Department Staff: Conduct training on biomass estimation methods, data interpretation, and using the GIS platform for biomass monitoring. This may include workshops on using AI/ML tools, GIS, and remote sensing for forestry applications.
- Knowledge Transfer on Data Analytics: Provide guidelines and tools for department staff to analyze and interpret biomass data independently, empowering them for long-term forest monitoring.

I. Maintenance and Continuous Monitoring

- Long-term Monitoring Protocols: Outline continuous monitoring methods, including re-calibration of AI/ML models and updating allometric equations based on new data.
- Post-Project Support: Specify requirements for post-project support, including maintenance of software, troubleshooting, and assistance in data interpretation.

4.3.3.8 Mangroves Mapping and Survey

Mapping and surveying mangroves involve the use of remote sensing, field surveys, and geographic information systems (GIS) to identify, characterize, and monitor mangrove ecosystems. There are two main steps. The first step is identification of Mangrove area, and its density, using different spatial tools, drone, and in-situ field measurements. Second step is to monitor its change in density at temporal level which can be carried out every 3-month repetition study analysis.

The bidder needs to perform supervised or unsupervised classification of the satellite imagery to delineate mangrove extent and distribution. Utilize spectral indices specific to mangrove vegetation, such as the Normalized Difference Vegetation Index (NDVI) or the Normalized Difference Water Index (NDWI), to enhance the discrimination of mangroves from other land cover classes. Incorporate ancillary data such as elevation, tidal inundation patterns, and salinity levels to improve the accuracy of mangrove mapping in complex coastal environments.

Delineate mangrove zones, including fringe, scrub, and interior zones, based on vegetation density, elevation gradients, and hydrological conditions. Assess mangrove health indicators such as canopy cover, leaf area index (LAI), and vegetation productivity using remote sensing-derived metrics and field-based measurements. Identify areas of mangrove degradation, habitat loss, and anthropogenic disturbances (e.g., aquaculture, urbanization) to prioritize conservation and restoration efforts.

The Project also focus on Mangrove Plantation Mapping, Counting, and Monitoring through advanced technologies like remote sensing, AI/ML, and GIS, a detailed scope would include specific components to ensure precise tracking, analysis, and

management of mangrove ecosystems. Below is a comprehensive breakdown of the scope:

1. **Data Collection and Acquisition**

a. High-Resolution Satellite Imagery: Acquisition of high-resolution imagery to monitor mangrove coverage and detect subtle changes over time. Specify spatial resolution requirements (e.g., 3m or better) for accurate mapping.
b. Drone Surveys: Deploy drones equipped with RGB and near-infrared sensors for detailed, close-range imagery in dense mangrove areas, especially where satellite imagery may be obscured by clouds.
c. In-situ Data Collection: Collection of ground truth data, including species counts, plant height, and canopy measurements, to validate remote sensing outputs. This includes environmental variables such as salinity, soil moisture, and water quality, as these directly impact mangrove health.
d. Temporal Data for Monitoring Seasonal Changes: Specify seasonal and inter-annual data collection for tracking mangrove growth, health, and regeneration trends. This requires multi-date imagery to identify temporal variations.

2. **Mapping and Classification of Mangrove Areas**

a. Spectral Analysis for Mangrove Identification: Utilize specific vegetation indices like NDVI (Normalized Difference Vegetation Index) and NDWI (Normalized Difference Water Index) to differentiate mangrove areas from other land cover classes.
b. Zoning of Mangrove Areas: Define different zones within mangrove ecosystems, such as fringe, scrub, and interior zones, based on vegetation density and hydrological conditions. This zonation helps in targeted conservation efforts.
c. Species Identification and Classification: AI-based models to identify dominant mangrove species using spectral and textural analysis. High-resolution data may be required to distinguish species by unique spectral signatures.

3. **Counting and Health Monitoring**

a. Individual Tree Counting: For denser and accessible areas, AI algorithms should be deployed to perform individual tree counting, which includes canopy segmentation and measurement using object detection techniques.
b. Canopy Density and Coverage Estimation: Analysis of canopy cover density and health using vegetation indices and canopy texture features to identify healthy, stressed, or degraded areas.
c. Health Assessment: Use AI models trained on vegetation indices and environmental data to monitor signs of stress, degradation, or disease in mangrove populations. This may include indices like chlorophyll content estimation for health status assessment.

4. **Change Detection and Degradation Monitoring**

a. Multi-Temporal Change Detection: AI algorithms to detect changes in mangrove extent, health, and density over specified time intervals. Techniques may include image differencing and vegetation index analysis.
b. Identification of Degraded Areas: Detect areas experiencing degradation due to factors like pollution, aquaculture expansion, or natural disasters. Define thresholds for classifying areas as degraded, partially degraded, or healthy.
c. Encroachment Monitoring: Use AI to track encroachment activities, such as agricultural expansion or infrastructure development, in protected mangrove zones. This requires comparison with legal boundaries and historical records.

5. **Carbon Sequestration and Biomass Estimation**

a. Biomass Calculation Models: Develop algorithms for estimating above-ground biomass using allometric equations based on species, height, and canopy coverage. Remote sensing data combined with ground measurements would refine accuracy.
b. Carbon Stock and Sequestration Monitoring: Regularly estimate carbon storage capacity and sequestration rates, contributing to Gujarat's carbon credit objectives. Include reporting of seasonal and annual trends in carbon stock.

6. Mapping and Visualization Tools

a. GIS-Based Interactive Dashboards: Develop GIS-based dashboards to visualize real-time data on mangrove coverage, health, and threats. Dashboards should allow stakeholders to drill down by region, health status, and time.
b. Time-Series Visualizations: Use time-lapse or animated maps to showcase changes in
c. mangrove ecosystems over time, enabling stakeholders to observe restoration or degradation patterns.

7. Predictive Analytics and Early Warning System

a. Growth Prediction Models: Implement ML algorithms that forecast mangrove growth based on historical data, climate variables, and environmental conditions. This can help guide restoration and replanting efforts.
b. Early Warning for Threats: Establish an early warning system that uses real-time satellite data and AI to detect unusual patterns indicative of threats such as pollution or deforestation.
c. Climate Impact Analysis: Analyze climate data to predict potential impacts on mangrove health and resilience, providing insights into future conservation challenges.

8. Accuracy Validation and Field Verification

a. Validation with Ground Truth Data: Conduct periodic field verification using GPS and in-situ measurements to validate AI-generated mangrove health and count data.
b. Error Analysis and Model Improvement: Perform accuracy assessment (e.g., confusion matrices, precision, recall) and use error metrics to refine AI models as more ground data becomes available.

9. Maintenance and Continuous Monitoring

a. Long-Term Monitoring Plan: Outline a plan for continuous monitoring of mangrove ecosystems post-project completion, ensuring sustainability.
b. Technical Support and Training: Offer ongoing technical support and training to ensure the Forest Department can independently monitor and maintain the system over time.

4.3.3.9 Plant Health and Soil Moisture at Nursery

The project also includes Plant Health and Soil Moisture Monitoring at Forest Nurseries for the Gujarat Forest Department, the scope encompasses real-time monitoring, data analytics, predictive modeling, and reporting to enhance plant growth and soil health in nursery environments. This scope is intended to help forest nurseries optimize growing conditions for saplings and young plants, ensuring healthy, resilient stock for reforestation and conservation initiatives.

Data Collection and Management System

Data Analytics and Health Assessment

- **Plant Health Analytics**:
  - **Health Indices Calculation**: Use spectral indices like NDVI (Normalized Difference Vegetation Index) and EVI (Enhanced Vegetation Index) to assess plant health, vigor, and stress levels across the nursery.
  - **Growth Trend Analysis**: Track plant growth stages, health improvements, or declines over time to provide insights into the effectiveness of irrigation and nutrient management practices.
  - **Disease and Pest Detection**: Use image analysis and AI models to identify signs of disease or pest infestations early, triggering preventive measures.
- **Soil Moisture Analytics**:
  - **Moisture Balance Analysis**: Assess soil moisture trends and calculate water balance to optimize irrigation schedules based on real-time soil moisture data.
  - **Drought and Water Stress Prediction**: Identify potential drought stress areas and adjust watering practices dynamically to maintain ideal moisture levels.

Predictive Modeling and Decision Support

- **Predictive Analytics for Irrigation**:
  - **Irrigation Scheduling Model**: Implement AI models that use soil moisture and weather data to predict optimal irrigation schedules, reducing water usage while maintaining plant health.
  - **Weather Forecast Integration**: Integrate local weather forecasts to adjust irrigation schedules based on expected rainfall, temperature, and humidity, further conserving water resources.
- **Plant Growth and Health Forecasting**:
  - **Growth Prediction Models**: Develop models to forecast plant growth based on historical data, helping to plan for replanting or transferring plants based on health status and maturity.
  - **Environmental Stress Impact Modeling**: Predict the impact of extreme weather conditions on plant health, allowing nursery managers to take preemptive actions.

Alert and Notification System

- **Threshold-Based Alerts**:
  - **Soil Moisture Threshold Alerts**: Automatic alerts for nursery managers if soil moisture levels fall below or rise above specified thresholds to prevent over- or under-watering.
  - **Plant Health Alerts**: Notifications for abnormal plant health readings, such as sudden drops in NDVI or signs of thermal stress, prompting immediate investigation.

- **Mobile and Web-Based Notifications**:
  - **Cross-Platform Notifications**: Alerts via mobile apps, SMS, or email, ensuring that nursery staff receive timely notifications, even when they are off-site.
  - **Visual Dashboards with Alert Indicators**: Dashboard visualization of sensor data with color-coded indicators showing areas requiring attention, making it easy to identify problem spots.

Mapping and Visualization

- **GIS-Based Health and Moisture Maps**:
  - **Spatial Mapping of Soil Moisture and Health**: Generate maps showing spatial distribution of soil moisture and plant health across the nursery, allowing targeted interventions.
  - **Time-Series Analysis and Visualizations**: Use time-series data (PhenoMet tower data and/or Satellite data) to create visualizations that show changes in soil moisture, plant health, and growth over time.

Training and Capacity Building

- **System Administration Training**:
  - **Data Platform Management**: Training for administrators on managing data platforms, setting thresholds, generating reports, and handling alerts.

4.3.3.10 Overall Benchmarking (Output Validation)

Validation of the all-generated output is necessary and agency shall be responsible for conducting all possible validations of outputs generated on a sampling basis and the overall accuracy of 80% or more should be achieved. The agency must note that the field verification will be carried out by forest officials once the report is submitted to department. The Count of plantations and trees, Forest Type, Forest Cover change, Forest Species, Deforestation area, Forest Encroachment, Mangrove's area and Forest biomass reported by the bidders against the forest field information will be cross checked and verified by Forest officials on ground for deriving the accuracy of the data submitted by the agency.

4.3.4 Digital Web Platform

Developing a web portal with an integral interface would involve creating a unified online platform that seamlessly combines various functionalities and services. This includes designing an intuitive user interface, integrating backend systems, ensuring security, and providing a scalable and user-friendly experience.

Some of the functionalities, 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 support HTTPS protocol on Secure Socket Layer (SSL). The portal should provide support for comprehensive audit trail.
- The portal should be integrated with standard email and instant messaging services.

- The portal should support all popular browsers like Internet Explorer, Chrome, Firefox, etc.
- The digital platform should have the capability to report and provide dashboards to monitor the overall performance of the project aggregate from the cluster level to the overall program level.
- The platform should Maintain and analyze land records, forest area, forest coverage, forest species stage Images, other nearby farm activities and its data, weather forecast in real-time integration.
- Overall dashboard on, forest department users and clusters. It should highlight effectively how the overall project is progressing and which areas are performing, and where attention is required.
- The Management information system (MIS) Shall have provision of collection of data from the field at all levels along with facility to generate reports and analyze data.
- Field activity reporting dashboards - This should include understanding of field activities and data reporting by coordinators, training, and farmer meetings-related interventions.
- Reports: Comprehensive reports with Excel and PDF download options for monitoring and extracting various project progress reports for internal assessments.
- Map view: Showcasing geo locations of all species / community, the complete details about them, their growth status and acreage.

4.3.4.1 Digital Web Platform Modules

Digital Web Platform for Forest Monitoring and Management shall involve development and deployment of below major modules: -

- Forest Trees /Plantation Monitoring
- Plant Health and Soil Moisture
- Mangroves Plantation Monitoring
- Forest Type and Species Mapping
- Biomass Estimation
- Forest Boundaries Module
- Forest Encroachment Module
- Forest Fire Mapping
- Deforestation Mapping
- Forest Cover Change Detection

4.3.4.2 User & Master Management:

For User & Master Management in the context of a forest department system for managing personnel and resources, the following scope describes the setup, user roles and access controls.

User and Master Data Creation

- **Creation of Master Fields**:

- Establish master fields for core data categories (e.g., department, role, geographic area) that form the foundation for structured data organization.

- **Department Master**:
  - Define a "Department Master" that categorizes various forest departments and sub-departments, setting up hierarchical structures. This allows efficient tagging and categorization of users based on department assignments.

- **State, Block, and Field Officer Masters**:
  - **State Officer Master**: Manage records of state-level officers, including designations, assigned regions, and departments.
  - **Block Officer Master**: Organize information specific to officers at the block level, focusing on jurisdictional and operational information.
  - **Field Officer Master**: Track field officers' roles, their assigned forest or nursery regions, and other operational details.

User Creation and Role Assignment

- **User Creation**:
  - Enable creation of users within the system, allowing administrators to add users with relevant details such as name, contact information, department, and designated role.
  - Allow individual users or admins to update profiles, ensuring records remain current with changes in designation or responsibility.

- **Tagging and Role Assignment**:
  - **Tagging User Types**: Assign tags to users based on their type (e.g., department, state, block, field) to streamline identification and access management.
  - **Designation and Role-Based Tagging**: Link each user to a specific role (e.g., state officer, field officer) and department, enabling system-based access control and tailored workflows based on role.

- **Access Rights Management**:
  - **Role-Based Access Control**: Define permissions based on role, allowing only authorized users to access certain features, reports, or data, ensuring data confidentiality.
  - **Customizable Access Levels**: Allow configuration of specific access levels for roles within each user category, such as read-only or edit access for certain resources.

Login Credentials and Profile Management

- **Login Credentials**:

- Facilitate the creation and management of unique login credentials for all users, with options for resetting passwords and securing accounts through two-factor authentication (2FA) for sensitive data.
- The portal should not allow concurrent sessions for same user.

- **Profile Management**:
  - Allow users to view and update their own profiles, with fields for personal details, role information, and contact details.
  - Provide admin-level access to update user profiles when necessary, supporting data accuracy and security.

User Access Management

- **User Access Control**:
  - Set up permissions management, allowing admins to grant or restrict access to specific areas of the system based on a user's role or department.
  - Implement automated access management to adjust access rights if a user's role changes within the organization.

- **Access Monitoring and Auditing**:
  - Include a log of all user access events and changes to permissions for security and compliance purposes.
  - Provide an audit trail feature for viewing recent access and activity by user, identifying unauthorized or unusual access patterns.

4.3.4.3 Reporting and Compliance

- **User and Access Reports**:
  - Generate periodic reports on active users, access history, role updates, and any changes to user access permissions.
  - Provide audit logs and compliance reports as required for internal and external audits.

For Digital Web Platform Development to support the forest department's project monitoring, data management, and analysis needs, the scope should address comprehensive functionalities in dashboard reporting, data integration, geo-mapping, and real-time analysis. Here is a detailed scope as per the RFP.

4.3.4.4 Dashboard and Reporting Capabilities

- **Hierarchical Dashboard Views**:
  - The platform should provide hierarchical dashboard views, allowing users to monitor project performance from the **cluster level up to the program level**. Users should be able to filter views by region, forest type, officer role, or project type.
  - **Performance Insights**: Display summary statistics, key performance indicators (KPIs), and progress metrics, with visual indicators (such as color codes) to identify high-performing areas and regions requiring attention.

- **Overall Project Monitoring**:

- The dashboard should give a comprehensive overview of **project metrics** including land records, forest coverage, species health, and other key metrics.
- **Cluster-Level Analysis**: Enable cluster-level breakdowns to view data specific to regions, providing insight into regional performance and allowing for targeted interventions.
- **User and Cluster Tracking**: Track activities and data entries by department users and clusters to provide a clear picture of contributions, productivity, and on-ground activity.

4.3.4.5 Data Collection, Maintenance, and Analysis

- **Land Records and Forest Data Management**:
  - The platform should manage and maintain detailed land records, including information on **forest area, forest coverage, acreage, and land ownership** where applicable.
  - **Species Monitoring**: Include fields for capturing data on forest species types, growth stages, and acreage, with an option to upload images (e.g. PhenoCam or field photo) for visual monitoring of plant health.
- **Integration of Farm and Weather Data**:
  - Enable integration with real-time weather data sources (e.g. IMD data and/or other data sources) and also provide forecasts (e.g. IMD forecasts or any other source as decided) directly on the platform, supporting decisions related to reforestation, planting, and maintenance activities.
  - **Nearby Farm Activities**: Capture and analyze data on neighboring farm activities that may affect forest regions, including details on crop types, water usage, and any potential environmental impact.
- **Field Data Collection Module**:
  - Provide a field data collection module for tracking activity across various levels, such as cluster, block, and field levels. This should allow field officers to input data directly into the system or via the mobile application.
  - **Data Validation and Approval**: Include a workflow for data verification and approval, enabling supervisors to review and approve field entries to maintain data quality.
- **Field Activity Reporting Dashboard**:
  - Develop a dedicated dashboard for tracking field activities, including interventions, trainings, and meetings conducted by coordinators and officers.
  - **Performance Analysis**: Include fields for tracking number of farmers met, number of trainings conducted, participation levels, and any significant outcomes from field activities.

4.3.4.6 Comprehensive Report Generation and Download

- **Report Types**:
  - Generate various report types including project progress reports,

performance reports, resource utilization reports, and more, providing insights across different aspects of project management.

- **Report Customization**: Allow users to customize reports based on parameters such as date range, cluster, field activity, or officer role to suit specific analytical needs.

- **Export Options**:
  - Provide downloadable formats for reports in Excel and PDF to allow for offline analysis, printing, and sharing.
  - **Scheduled Report Generation**: Offer options for generating and sending reports at scheduled intervals (e.g., weekly, monthly), ensuring timely access to important data for ongoing assessments.

Geo-Mapping and Visual Data Representation

- **Map-Based Visualization**:
  - Implement a GIS-based map view displaying geo-locations of all recorded species and land areas within the project. Users should be able to zoom in on specific regions and view detailed information on the selected area or species with the date & time stamping of the observation.
  - **Species Growth Status and Acreage Details**: Each geo-tagged location should display specific details, such as species type, growth stage, health status, and acreage.

- **Interactive Map Features**:
  - Include interactive features such as layer overlays (e.g., soil type, weather forecast, topographic layers and land boundaries) to aid in multi-dimensional analysis.
  - **Heatmaps and Density Indicators**: Develop visualizations such as heatmaps or density indicators to highlight areas with high species density, wildlife species population, tourists' influx, significant project activities, or high-risk zones that require attention.

User Access and Data Security

- **Role-Based Access Control (RBAC)**:
  - Implement role-based access control to ensure only authorized personnel can access, edit, or download specific data, maintaining data security and integrity.
  - **Audit Logs and Access Monitoring**: Maintain an audit log to track user actions, including data entries, report generation, and approvals, providing a record for accountability and compliance.
- **Data Security and Encryption**:
  - Ensure all data transmitted and stored on the platform is encrypted and complies with industry standards for data protection, ensuring secure access for departmental officials and field staff.

4.3.4.7 Real-Time Data Synchronization and Mobile Integration

- **Mobile and Web Synchronization**:
  - Ensure seamless synchronization with the mobile application used for field data collection, so that data collected in the field appears in real time on the web platform.
  - **Offline Data Support**: Include functionality for offline data collection on the mobile app, with automatic syncing to the web platform when connectivity is restored.
- **Notifications and Alerts**:
  - Enable notification settings for updates, alerts, or reminders, helping users stay informed of important events, deadlines, or flagged issues that require attention on the platform.

Technical Support, Maintenance, and Training

- **User Training and Support Documentation**:
  - Provide comprehensive training for departmental users, including detailed user manuals, tutorial videos, and FAQs to support ease of use.
  - **Ongoing Technical Support**: Offer a support desk or help portal for technical support, ensuring users can troubleshoot issues and request assistance as needed.
- **Maintenance and Platform Updates**:
  - Establish a schedule for regular maintenance and updates, including feature enhancements, security patches, and improvements based on user feedback.
  - **Data Backup and Recovery**: Implement automated data backups and a disaster recovery plan to protect data integrity in case of system failures.

The above-mentioned requirements are tentative and exhaustive requirements would be shared by the department to the selected SI.

4.3.4.8 Specifications for the Digital Web Platform

Category	Requirement	Compliance (Yes/No)
Forest Type and Species Mapping	Software should be capable of mapping forest types (e.g., Evergreen, Semi-evergreen) and their spatial distribution using multi-temporal satellite imagery and vegetation indices.	
	Software should be able to automatically download the Satellite Imagery for the time period and Area selected and should perform the Automated preprocessing of the Satellite Images and showcase single image as an output	
	Software should have the functionality to classify tree species using supervised or unsupervised algorithms and refine results with object-based image analysis (OBIA).	
	Software should integrate ancillary data (e.g., canopy height models, environmental variables) for enhanced accuracy in mapping forest types and species.	
	Software should validate classification accuracy using ground truth data and calculate metrics such as overall accuracy, kappa coefficient, and producer's/user's accuracy.	
	Software should generate thematic maps with legends, metadata, and visualizations for stakeholder interpretation.	
Forest Monitoring and Analysis	Software should automate tree detection and species identification using AI/ML algorithms.	
	Software should have the functionality to map tree density and spatial distribution using clustering techniques.	
	Software should assess tree health using indices like NDVI and EVI, and estimate, productivity, biomass and carbon stock with AI/ML models based on, vegetation indices (e.g. multispectral and SAR satellite based), tree height, diameter, species data and allometric equations.	
	Software should detect deforestation, degradation, burnt scar and encroachment using temporal satellite imagery and AI- driven change detection algorithms.	
	Software should validate encroachment detection results using field surveys, GPS points, and high-resolution imagery.	
Forest Fire Mapping	Software should be capable of detecting active fire hotspots using thermal imagery and algorithms such as normalized burn ratio (NBR).	
	Software should define fire perimeters using spatial clustering techniques and generate fire severity maps with indices like NDVI or dNBR.	
	Software should validate fire detection accuracy using ground truth data and provide early warnings through an integrated alert system.	

Deforestation and Forest Cover Change	Software should perform change detection using multi-temporal satellite imageries to identify deforestation, forest degradation, and reforestation activities. Software should have tree-counting algorithm for high resolution optical (Multispectral or Panchromatic) data from satellites or UAV based imageries.	
	Software should distinguish between natural forest dynamics and human-induced changes using vegetation indices and AI algorithms.	
	Software should generate thematic maps and time-series visualizations of forest cover changes for actionable insights.	
	Software should detect hotspots of deforestation and prioritize areas for conservation based on spatial and temporal analysis.	
Above-Ground Biomass Estimation	Software should estimate biomass using high-resolution satellite imagery (Synthetic Aperture Radar, Multispectral optical), LiDAR, and AI/ML algorithms, integrating ground truth data like DBH, tree height and allometric equations.	
	Software should calculate carbon stock and sequestration rates using standardized methodologies such as IPCC guidelines.	
	Software should monitor biomass changes over time using temporal data analysis and provide alerts for significant disturbances.	
	Software should generate biomass density maps and offer GIS-enabled dashboards for interactive visualization.	
Mangrove Mapping and Monitoring	Software should classify mangrove zones (e.g., fringe, scrub) using spectral indices like NDVI/NDWI and ancillary data such as salinity and elevation.	
	Software should identify and monitor mangrove health using vegetation indices, canopy cover analysis, and AI models trained on environmental variables.	
	Software should detect changes in mangrove density and health (greenness) over time using temporal imagery and change detection algorithms and provide alerts for any sudden change arising due to defoliator attacks.	
	Software should provide GIS-based dashboards with real-time data on mangrove coverage, health, and carbon sequestration rates.	
	Software should have the capabilities of Monitoring the seed bed and automatically generate the alert in case of change from the original location of the seed bed	
Nursery Plant Health and Soil Monitoring	Software should assess plant health using NDVI/EVI and track soil moisture trends with IoT-enabled sensors and environmental data.	
	Software should forecast optimal irrigation schedules and predict plant growth trends using AI models integrated with weather data.	

	Software should issue alerts for abnormal plant health readings and soil moisture levels through a real-time notification system.	
	Software should generate weekly, seasonal, and annual reports on plant health, growth rates, and soil moisture conditions with visual data representations.	
General	Software should have the capabilities of performing automated drone image processing and analysis	
	Software should have the capabilities to compare the historical Image data, harmonization of data and generate automated results for forest cover change mapping	
	Software should have the capabilities of detecting New plantation through the input images provided	
	Software should have capabilities of notifying real time fire alerts	
	Software should have capabilities of automatically generating soil moisture data every fortnight with the help of Satellite Images	
	Software should have capabilities of carrying out viewshed analysis and analysis on viewing geometry of the forest watch towers and suggest optimisation of watch towers based on the visibility analysis of the tower height and digital elevation model of the landscape.	
	Software should have module for corridor modelling and analysis (connectivity of fragmentated forest patches) based on ecological parameters (proximity to source of water, shelter and conflicts) for suggesting development of movement corridors of the key wildlife species.	
	Software should have module for spatial geostatistical functions to compute spatial biodiversity matrices (measures of heterogeneity – alpha, beta and gamma diversities) from high resolution vegetation indices derived from satellite data.	
	Software should have module for analysis of landscape level forest matrices (fragmentation, patchiness, porosity etc).	
	Software should have module to carry-out forest hydrological analysis to monitor the ecosystem services being rendered by forests in terms of providing sub-surface water flow to forest streams during dry period.	

4.3.5 Mobile Application Development

- The mobile interface should be functional in both android and iOS platforms and should have these basic functionalities.
- User login based on credentials and encryption of passwords for data security.
- Overview screen to showcase the overall performance of the field user.
- Interface should be compact and not be heavy or not occupy excessive RAM on device.

- GT officer Registration: Features should include add officer with complete details including Aadhar card QR code-based scanning facility, officer's photo, allocated area, and other customizable form options as required by the program.
- Land and area Registration with forest type, approx. species, Acreage, species name and its other information, and other customized form option to capture any other details as required in future.
- Species spread in an area for correct Acreage measurement – To measure the area of the land accurately so that use or planning of suitable solutions can be recommended.
- Near area Nursery Activities, if observed then its details too.
- Permission to take only live photos.
- Uploading photos from gallery of device should not be permitted.
- Species Stage monitoring with Visuals (Images) – Option to capture species images and add additional details as required.
- Events/Training Section for capturing complete events details: Event data, Location, Number of attendees, Picture option, Invitation to farmers and feedback section with geo tagging of event site.
- Custom forms option to take care of any additional information requirements through app based custom tailored input forms.
- Field team Performance evaluation system: Application to track the performance of the field team and score them according to the weightage defined for various KPI activities performed by the field team. Capability to track details like number of farmers met, distance travelled, number of transactions made on mobile application, GPS tracking etc.
- Department log-in credentials to monitor the field survey data and for its approval.
- All the data collected should accessible to web platform with secured permission permitted log-in details to departmental officials.

4.3.5.1 Platform and Basic Functionalities

- **Cross-Platform Compatibility**:
    - The application should be natively developed for both **Android and iOS** platforms to ensure compatibility and performance across a range of devices commonly used by field officers.
    - Ensure regular updates and compatibility checks to support future OS versions for both platforms.
- **User Authentication and Security**:
    - **Login Credentials**: Secure user login based on unique credentials provided by the department.
    - **Data Encryption**: Encrypt user passwords and sensitive data both at rest and in transit to protect information and comply with data security regulations.
    - **Role-Based Access Control**: Implement access levels based on user roles (e.g., field officer, GT officer, department admin), allowing only authorized personnel to access or modify specific information.

User Interface and Navigation

- **Overview Screen**:
  - Develop an intuitive overview screen displaying the **user's daily and overall performance** metrics, including tasks completed, areas covered, and overall progress.
  - Real-time syncing and notifications on updates, tasks, and alerts, enabling users to stay informed on required activities.
- **GT Officer Registration Module**:
  - **Officer Details Entry**: Allow for comprehensive GT officer registration, capturing details such as name, photo, Aadhar information with QR code scanning for quick entry, and assigned areas.
  - **Customizable Forms**: Include customizable form fields to allow the department to add additional officer details as required.

Land and Area Registration

- **Forest Land Registration**:
  - **Geospatial Data Collection**: Enable the user to register land and area details, specifying forest type, approximate species distribution, acreage, and other site-specific details.
  - **GPS-Enabled Area Measurement**: Integrate GPS-based measurement tools to accurately capture the area size, calculate species spread, and estimate land use requirements.
- **Species and Acreage Management**:
  - **Species Inventory**: Provide forms to capture detailed information on species within a given area, including species name, type, growth stage, and coverage area.
  - **Invasive Species Reporting**: Provide forms to capture detailed information on invasive species within a given area, location (point and polygon), including species name, growth stage, coverage, measures taken for eradication / management.
  - **Acreage Calculation**: Incorporate acreage calculation functionality to help in planning and managing suitable interventions based on area size and plant density.
- **Observation of Nearby Farm Activities**:
  - **Nearby Activities Module**: Enable users to document observed farm activities near forest areas, including details on crop types, irrigation methods, and other activities that may impact the forest ecosystem.

Photo and Visual Documentation

- **Live Photo Capture Only**:
  - Restrict photo documentation to live capture only, disabling gallery uploads to ensure authenticity and real-time field data.
  - Offline functionality for data collection in remote areas with later synchronization when connectivity is available.

- Enable **geo-tagging** of photos to capture location data for accurate positioning in reports.

- **Species Stage Monitoring**:
  - **Image-Based Plant Monitoring**: Allow field officers to capture images of plant species and add notes on growth stage, health indicators, and any observable issues like disease or pest damage.

Event and Training Section

- **Event Documentation**:
  - Enable field officers to capture detailed information on events and training sessions, including event type, location, number of attendees, and participant feedback.
  - **Photo Capture with Geo-Tagging**: Include options for capturing photos of the event location with geo-tagging, allowing for comprehensive event documentation.

- **Invitation and Feedback Module**:
  - **Invitation Management**: Provide the option to send invitations to farmers or community members for awareness sessions or training events.
  - **Feedback Collection**: Collect feedback from attendees on the event or training, using forms that can be tailored to gather specific information as per program requirements.

Custom Forms and Additional Data Collection

- **Custom Form Builder**:
  - Include a flexible custom form builder to enable the department to add or modify form fields based on new survey requirements. This will allow data collection on emerging issues or specific project needs without needing application updates.
  - **Template Management**: Save commonly used forms as templates for future use, providing quick access to standardized data collection formats.

Field Team Performance Evaluation

- **Performance Tracking Module**:
  - **Activity-Based Scoring**: Develop a scoring system that evaluates field officers based on key performance indicators (KPIs) such as the distances traveled, number of surveys completed, and transactions on the app.

- **Real-Time GPS Tracking**: Track GPS-based movements of officers to monitor travel patterns and verify time spent in various regions, helping in performance analysis and resource planning.

- **Performance Reports**:
  - **Individual Performance Reports**: Generate detailed reports on each officer's activities, including time spent, areas covered, and actions taken.
  - **Team Performance Dashboard**: Create a dashboard for department administrators to view the aggregated performance of all field teams, with filters for specific dates, regions, or officers.

Departmental Monitoring and Approval System

- **Department Login for Supervisory Access**:
  - Allow departmental officials to log in and monitor survey data, events, and performance metrics of field officers in real time.
  - **Approval Workflow**: Integrate an approval system where departmental officials can review and approve data entries, events, and reports submitted by field officers.

- **Data Verification and Audit Logs**:
  - Maintain audit logs of all entries, updates, and approvals to ensure accountability and traceability of data modifications.
  - Allow for sample verification and field validation to ensure data integrity and accuracy.

Data Access and Integration with Web Platform

- **Secured Data Transfer and Storage**:
  - Implement secure data transfer protocols to sync data collected on the mobile app with the central web platform. Ensure encryption during data transmission and storage.

- **Web Platform Accessibility**:
  - Enable all collected data to be accessible via the web platform with user-specific permissions, allowing departmental staff to generate reports, conduct analyses, and make data-driven decisions.

- **Data Export and API Integration**:
  - Support data export in common formats (e.g., CSV, PDF) and provide APIs for integrating with other departmental systems for streamlined data flow and cross-platform accessibility.

Reporting and Compliance

- **Field Survey Reports**:
  - Generate standardized reports for field surveys, capturing data on land registration, species monitoring, soil conditions, and observed activities.

- **Compliance and Security Audits**:
    - Conduct regular security audits to ensure the application's compliance with data protection standards and ensure data integrity.
    - **Data Retention and Archiving**: Outline a data retention policy to automatically archive or delete data after a specified period, ensuring compliance with organizational policies.

The above-mentioned requirements are tentative and exhaustive requirements would be shared by the department to the selected SI.

4.3.6 API First Approach and API Integration

The platform should be based on open API approach as multiple channels like web portal, mobile applications and other interfaces should access the platform

a. Adaptable architecture should be supported for changing business needs and end user requirements.
b. It would have integrated various systems, applications, databases already being used or to be built for future.
c. Selected bidder has to set up, and maintain systems and processes for following APIs. The authority does not have any available APIs.
    i. Authorization and license key management
    ii. Standardization
    iii. Authentication
    iv. Version Control
    v. Environment management
    vi. Security Governance
    vii. Audit Trail

The bidder shall carry out API based integration with any of the existing and future projects as well as Van Prahari i.e. project related to Forest Check posts. The bidder shall also integrate the application with the Forest Fire Portal of Central Government.

The Bidder will be responsible for implementation of data algorithms, global classification algorithms from ISRO, API and Data Sets.

4.3.7 Reports, Documents, Presentation etc

4.3.7.1 AI/ML based data analytics and Report Generation

- Periodic reports are to be provided by the bidder on monthly basis.
- All the reports are to be submitted online only.
- All the reports are to be uploaded on the portal once the department approve of it.
- All the reports uploaded to the portal are to be permissive based downloadable.
- All the reports must be in PRF non edited version only.

For the scope outlined, the bidder would be required to submit a series of detailed reports regularly. These reports should comprehensively document data findings, analysis, progress updates, and validation results for effective monitoring and management by the Gujarat Forest Department. Below are the types of reports expected:

Sr #	Reports/ documents (Softcopy	Details	Frequency

	Submission)		
1	Usage Reporting and Analytics	Generate reports on inventory usage, trends, and monthly consumption to help forest managers optimize supply chain and resource allocation	Monthly
2	User and Access Reports	Generate periodic reports on active users, access history, role updates, and any changes to user access permissions. Provide audit logs and compliance reports as required for internal and external audits.	Monthly
3	Project progress reports		Quarterly
4	Performance reports		Quarterly
5	Resource utilization reports		Monthly
6	Plant Health Report	Automated: Software should generate weekly, seasonal, and annual reports on plant health, growth rates, and soil moisture conditions with visual data representations.	Weekly
7	Field Team report	Individual Performance Reports: Generate detailed reports on each officer's activities, including time spent, areas covered, and actions taken. Team Performance Dashboard: Create a dashboard for department administrators to view the aggregated performance of all field teams, with filters for specific dates, regions, or officers.	6 months
8	Mapping and visualizing reports	Forest health, biomass, carbon stock, and encroachment, delivered in formats like PDF, Excel, and GIS-compatible formats	Quarterly and annually
9	Quality Assurance Reports	Provide standardized quality checks and monthly/quarterly reporting on data accuracy, errors, and corrective actions taken.	Monthly and Quarterly
10	Mapping and visualizing reports	Forest Trees /Plantation Counting and Monitoring Plant Health and Soil Moisture at Nursery Mangroves Plantation Mapping, Counting and Monitoring Forest Type and Species Mapping Above Ground Biomass Estimation	Each Report Every 2 Months throughout the project period
11	Mapping and visualizing reports	Delineation of Legal Forest Boundaries Detection and Mapping of Forest Encroachment Forest Fire Mapping Deforestation Mapping Forest Cover Change Detection	One Report each quarter for 3 quarters and 2 Reports for each line item for the 4th Quarter

12	Annual Summary and Impact Assessment Report	Project Report	Annually
13	Training and Knowledge Transfer Report	Details of training and knowledge transfer	Annually
14	Animal Detection Report	Regular reporting on animal detections, including incident summaries, response actions taken, and recommendations for improving wildlife safety near railway tracks.	Monthly
15	Animal Detection Report	Risk assessment report	Monthly and quarterly

Each report should include visual aids (e.g., graphs, maps, dashboards) where possible, and all reports are expected to be uploaded to a secure portal for real-time access by department officials.

Additionally, certain reports may be required in GIS-compatible formats to enable integration with other government databases.

4.3.8 Managed Services

The below are managed services requirements that Supplier should provide to Forest Monitoring and Management.

4.3.8.1 Backup Services

1. The agency 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 standard policies defined by GoI.
2. The agency should be responsible database backup and restore services.
3. The agency should perform a twice weekly full database backup, with a three times daily backup of database log files.
4. The Agency should Monitor and manage backup activity.
5. The Agency 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
6. The Agency should retain inactive versions of backed up flat files for 30 days and the last version of a deleted file for 60 days;
7. The Agency should retain database backups for thirty (30) days;

8. The Agency should perform administration, tuning, optimization, planning, maintenance, and operations management for backup and restore

9. Provide and install additional infrastructure capacity for backup and restore, as required and,

10. Perform backup on the next scheduled backup window in case of any scheduling conflicts between backup and patch management.

4.3.8.2 The Proposed solution deployment should be designed under High Availability architecture.

4.4 Technologies to Implement

This project focuses on implementing cutting-edge technologies to enhance operational efficiency and security. By leveraging smart tools, high-resolution surveillance systems, and automated monitoring tools, we aim to create a robust and responsive infrastructure that meets modern demands. The agency must implement minimum but not limited to below listed technologies.

4.4.1 Edge Devices

4.4.1.1 Body Worn Cameras

- The bidder needs to supply the Body-worn cameras which can be valuable tools for Forest Officers, providing a range of benefits in terms of safety, documentation, and communication.
- Incident Documentation: Forest Officers can use body-worn cameras to document incidents such as accidents, injuries, or encounters with wildlife. This documentation can be crucial for investigations and improving safety protocols.
- Emergency Response: In the event of an emergency, body-worn cameras can capture real-time footage, aiding emergency responders in understanding the situation and providing valuable information for coordinating a response.
- Data Collection: Body-worn cameras equipped with environmental sensors can assist in collecting data about the ecosystem. This can include temperature, humidity, and other relevant environmental factors.
- Flora and Fauna Documentation: Capture footage of plant and animal life, aiding in biodiversity studies or documenting the impact of forestry activities on the environment.
- Deterrence: Visible body-worn cameras can act as a deterrent to illegal activities, such as poaching or theft of forestry equipment.
- Evidence in Legal Cases: In the event of theft or other criminal activities, recorded footage can serve as valuable evidence in legal proceedings.

Communication and Collaboration:

- Live Streaming: Forest Officers can use body-worn cameras with live streaming capabilities to share real-time information with colleagues or supervisors. This can be particularly useful in remote areas where communication is challenging.
- Collaborative Decision-Making: By sharing video feeds, team members can collaborate on decision-making, especially in situations where a visual perspective is essential.

Training and Skill Development:

- Training Videos: Forest Officers can record training sessions or procedures, allowing for the creation of instructional videos. These videos can be used for onboarding new employees or as refresher courses for existing staff.
- Skill Assessment: Supervisors can review footage to assess the skills and techniques of Forest Officers, providing constructive feedback for improvement.

These cameras will serve as tools for forest officers to improve safety, enhance field documentation, and support monitoring activities across various forest conservation tasks.

The related connectivity for the data relay from the camera location to the command centre has to be ensured by the bidder. Bidders also need to provide connectivity for data relay.

The minimum bandwidth requirements would be 2 GB/Day for continuous monitoring basis (24x7) and the resolution of the output would depend upon on the end location and network availability.

4.4.1.2 Thermal Camera procurement and installation

The RFP is focused on deploying Thermal Cameras for Animal Detection and Prevention of Train Accidents, the scope is covered with requirements but not limited to for real-time monitoring, integration with alert systems, and data management capabilities to enhance wildlife safety near railway tracks. Here is a detailed breakdown of the scope:

System Design and Deployment

Thermal Camera Specifications:

- Resolution: Minimum resolution of 640x480 pixels to detect animals at a distance and in low-light or no-light conditions.
- Temperature Sensitivity: Ability to detect temperature differences as small as 0.05°C, enabling accurate identification of animals based on their heat signatures.
- Detection Range: Effective range of up to 750 meters or higher to ensure animals can be detected at a safe distance, providing sufficient time for response.
- Field of View: Wide-angle lens with a field of view between 45-90 degrees to maximize coverage along the railway tracks.
- Environmental Resilience: Cameras should be weatherproof and operate within a temperature range of -20°C to 60°C. They should be resistant to dust, rain, and humidity, with an IP67 or higher rating to withstand challenging outdoor conditions.

Mounting and Placement:

- Camera Placement: The cameras should be mounted along railway tracks at intervals specified to ensure continuous coverage. Locations near known animal crossing areas should have higher camera density.
- Mounting Hardware: Vandal-resistant enclosures and anti-theft mounting options should be used to secure cameras in remote areas.
- Height and Angle Adjustments: Specify mounting height (typically 10-15 feet above ground) and angle to optimize detection capabilities without interference from vegetation or other obstacles.

Thermal Imaging Analysis:

- Animal Detection Algorithm: Use AI-based thermal imaging algorithms to identify animals in real-time, distinguishing between different species based on size, shape, and movement patterns.
- Automated Classification: Algorithms should classify animals as large (e.g., elephants, leopards) or small (e.g., deer, monkeys) to prioritize high-risk crossings.

- Continuous Monitoring: Cameras must be capable of 24/7 monitoring with infrared or thermal imaging to detect animals during nighttime, fog, or other low-visibility conditions.
- Path Prediction: Include predictive algorithms to analyze animal movement patterns and determine if they are likely to cross the tracks.
- Alert Prioritization: Specify criteria for prioritizing alerts based on the type and size of animals detected to prevent unnecessary alerts for small or harmless wildlife.

Alert and Notification System Integration

- Instant Notifications: Define real-time alert requirements to notify train operators, railway authorities, and field staff via SMS, email, or mobile app notifications when animals are detected.
- Audio and Visual Alarms: Install local alarm systems (e.g., sirens, flashing lights) near tracks to warn both animals and approaching trains, potentially diverting animals away from tracks.

Integration with Train Control Systems:

- Communication with Train Operators: Real-time alert relay to train operators, providing them with a warning and the animal's exact location for necessary action.
- Location Accuracy: Alerts should include GPS-based location data of the detected animal, allowing for precise positioning and faster response.
- Mapping Interface: Provide a GIS-based mapping interface in the control center to visualize live locations of animals detected near railway tracks.

Data Storage and Retrieval:

- Video Storage: Define requirements for continuous recording and storage of thermal video footage. This data should be securely stored and accessible for retrospective analysis.

Data Analytics and Reporting:

- Incident Analytics: Implement analytics to analyze frequency, timing, and locations of animal crossings, helping to identify high-risk areas for focused intervention.
- Historical Data Analysis: Track patterns in animal movements over time to understand behavioral trends and improve response strategies.
- Monthly and Annual Reports: Regular reporting on animal detections, including incident summaries, response actions taken, and recommendations for improving wildlife safety near railway tracks.

Predictive Modeling for Seasonal Movements:

- Migration and Movement Trends: Use historical data to build predictive models that anticipate animal movements during specific seasons or times of day.
- Risk Assessment Reports: Monthly or quarterly reports identifying high-risk periods based on past detection data, enabling proactive planning and resource allocation.

Testing, Calibration, and Maintenance

- Field Testing: Define a testing period for calibrating thermal cameras in real-world conditions, ensuring accuracy in animal detection and classification.
- Sensitivity Adjustments: Specify the process for adjusting camera sensitivity and detection thresholds to minimize false positives from non-animal heat sources.

Routine Maintenance and Support:

- Scheduled Maintenance: Regular maintenance and calibration check to ensure optimal camera performance, including lens cleaning, sensor calibration, and firmware updates.

- Remote Diagnostics: Specify remote diagnostics and troubleshooting capabilities to minimize downtime and ensure continuous operation.
- Technical Support and Repair: 24/7 technical support and a defined response time for field repairs or replacements in case of equipment failures.

Training and Capacity Building

- Operator Training: Provide training for control center staff and train operators on interpreting alerts, responding to animal detections, and understanding camera functions.
- Field Staff Training: Train field personnel in camera maintenance, calibration, and troubleshooting to ensure efficient operation and minimal downtime.
- Awareness Workshops: Conduct awareness programs for railway and forest department staff to understand the importance of animal detection systems in reducing wildlife casualties.

Compliance and Safety Standards

- Environmental Compliance: Ensure all equipment complies with environmental protection standards, minimizing impact on wildlife habitats and ecosystems.
- Data Security and Privacy: Compliance with data security protocols to protect data from unauthorized access, ensuring confidentiality of stored video and thermal imagery.
- Legal and Regulatory Standards: All system components should adhere to local, state, and national regulatory standards governing wildlife protection and railway safety.

Deliverables and Reporting Requirements

- Installation Report: Initial report confirming successful installation, calibration, and testing of thermal cameras.
- Bi-Weekly or Monthly Monitoring Reports: Reports detailing incidents detected, animal types, locations, and actions taken in response.
- Annual Performance Review: Comprehensive report assessing the system's performance over the year, including detection accuracy, incident reduction statistics, and areas for improvement.
- Incident Response Logs: Record of all incidents detected, actions taken, and outcomes, to be accessible for audit and performance evaluation.

Continuous Improvement Suggestions: Propose refinements to algorithms, additional sensor placements, or adjusted protocols based on data and performance reviews.

The related connectivity for the data relay from the camera location to the command centre has to be ensured by the bidder. Bidder needs to provide connectivity for data relay.

The minimum bandwidth requirements for monitoring (24x7) has to be factored by the bidder and the resolution of the output would depend upon on the end location and network availability.

4.4.2 ICCC (Integrated Command and Control Center)

ICCC as a platform through its different layers and components shall act as a Decision Support System (DSS) for department administration to respond to real-time events by consuming data feeds from different data sources and by processing information out of data sets.

The agency shall establish a state-of-the-art ICCC, the indicative key components for the same shall be as follows:

• Video Wall system

• Operator workstations
• Active Networking Components (Switches, Routers, Firewall etc.)
• Passive Networking Components
• Electrical Cabling and Necessary LED Illumination Devices
• Workstations
• UPS and DG sets
• Access control system
• Building infrastructure management system
• ICCC furniture's and Safety Measures

The agency shall follow applicable standards while designing the ICCC physical build layout. Materials having the adverse impact on the environment and nature shall not be used. The entire design of the ICCC physical build infrastructure must be modular, Flexible, Dynamic, Scalable, Expandable and re- deployable to accommodate any technological changes / future needs which are not envisaged now. It must be prepared in strict compliance to ISO 11064 i.e. Ergonomic Design of control centers.
All applicable ergonomic parameters should be considered covering Lux level as per industry acceptable illumination levels, spatial arrangement for efficient & safe movement of operators within ICCC during normal and emergency situations, Ideal viewing angles (of operators) to ensure little head movement and minimal eye movement.

Sr #	Location Type	Approximate Area	Indicative Infrastructure
1	Integrated Command & Control Centre (ICCC) at Centre	1000 SFT	A. Video Wall, size 55" LED screens in 4 x 3 matrix B. Operator Workstations: 12 Nos C. Simultaneous Viewing Capability: All live Cameras / Smart components D. /Analytic Dashboard E. non-IT Infrastructure including 24/7 power, Infrastructure Management System- as per requirements F. UPS and DG set with required capacity G. Earthling and cooling requirements H. Any other hardware/software/licenses required for complete the solution

Integrated Command & Control Centre (ICCC) at Centre will majorly have

SN	Name of the Room	Approximate Dimension (All in feet)	Capacity (person)
1	Command & Control Room	As per Actual	12 Operators 8 Department Staffs
2	Conference Room (with glass panels facing operation control rooms)	As per Actual	20 Seats
3	Manager Cabin (2 Nos)	As per Actual	1+4 Seats
4	Reception & Waiting Area	As per Actual.	1 + 6

Major components for Command & Control Room at ICCC

Sr. #	Line Item	Qty. (Tentative)	Unit
1.	55” Led Screen for video wall (4x3 matrix configuration)	12	No.
2.	Video wall controller	1	No.
3.	Video wall management software	1	No.
4.	Keyboard Joystick to control PTZ Cameras	2	No.
5.	Monitoring Workstation	12	No.
6.	SITC of Networking components with (Switches, NW Rack, CAT6/ Fiber cable, etc. all active and passive components)	1	Lot
7.	MFP A3 laser colour Printer	1	No.
8.	Installation & commissioning of all required to complete the solution (not limited to items mentioned above)	1	set

Major components for Conference Room at ICCC

S N	Line Item	Quantity	Unit
1.	Interactive Video Screens 86”	**1**	**Nos.**
2.	Video conference solution with 250 concurrent users license	**1**	**Nos.**
3.	Workstation	**1**	**Nos.**
4.	Indoor Wi-Fi Access Points	**1**	**Nos.**
5.	Necessary electrical and Network point for Meeting and Conference Table	**1**	**Nos.**
6.	Projector	1	**Nos.**

Major components for each Manager Cabin at ICCC

S N	Line Item	Quantity	
1	Video Screens 42”	1	Nos.
2.	Workstation	1	Nos.
3.	MFP Printer	1	Nos

Integrated Command & Control Centre (ICCC) Implementation

i. All the IT infrastructure associated with personnel / Operators in ICCC shall be borne by the agency. Ownership of the assets will be on name of Forest Department.
ii. The authority will provide space (building premises) for setting up ICCC. Tenderer will be responsible for electrical and network cabling, video wall setup, non-IT and IT infrastructure required for setting up ICCC at Center.
iii. The ownership of the assets or goods & services will be produced in the name of agency and then it will be transferred to Forest Department on delivery and installation (post release of payments) of the assets or goods & services by the Agency. The agency will bear the risks till project tenure.
iv. The Agency will be responsible for the insurance of the goods & services till the project tenure.
v. The agency will be responsible for required MPLS and internet bandwidth at ICCC and as per functional requirement of the bid, and also provision for required network termination equipment (switches, routers, cables, etc.). Bidder will also arrange for the required Internet connectivity at each location. All charges related to bandwidth and connectivity shall be borne by the agency during the contract period.
vi. The authority will be responsible for application of permissions of power line and water supply. Electrical and water charges will be borne by the authority. The agency should consider for all the necessary equipment's/components/systems required for raw power conversion and stabilization as part of the overall proposed solution.
vii. The agency will install Online UPS (with 30 Min. backup) in high availability mode & with a warranty for 5 years. If required, the agency shall be liable to replace the battery bank during contract period to maintain the backup of UPS. The agency shall also install DG set of required capacity with AMF (Auto main failure) panel at handle the full load of ICCC during power down time. The agency should ensure that the DG with full tank fuel capacity should run for at least 8 hours and the agency shall bear the cost of fuel during the contract period.
viii. The agency shall comply with lightning-protection and anti-interference measures for system structure, equipment type selection, equipment earthing, power, signal cables laying. The agency shall describe the planned lightning-protection and anti-interference measures in the As-Is report. Corresponding lightning arresters shall be erected for the entrance cables of power line, video line, data transmission cables.
ix. The entire applicable IT infrastructure i.e. ICCC, Monitoring shall have adequate earthing. Further, earthing should be done as per national standard in relevance with IS standard.
x. All cables shall be clearly labeled with indelible indications that can clearly be identified by maintenance personnel. The proposed cables shall meet the valid directives and standards. Cabling must be carried out per relevant BIS standards. All cable layouts shall be documented in a cable plan by the agency.
xi. Non-IT infrastructure will include electrical cabling, network cabling work, etc.

ICCC Software Specification:

i. To develop a common interface software for the department. This software will have all the developed modules integrated to it.
ii. User-friendly interface
iii. Versatile data format support is needed.
iv. Dynamic interaction: Enable users to interact with the displayed content in real-time, fostering engagement, monitoring, and exploration.
v. CMS Features in ICCC:
    - Database Management: Easily view database tables and the data within them.
    - Data Integration: Add data to the database with a single click using Excel,

CSV files. Functionality to import data from API should also be there.

- Multimedia Uploads: Upload multimedia files, such as images, videos, and PDFs, with one click.
- Visual Presentation: Visualize multimedia files and data in a structured and aesthetically pleasing manner.
- Layout Building: Design the layout of uploaded data and multimedia seamlessly.
- Dynamic Configuration: Choose the number of screens for which layouts need to be prepared, software's dynamic and configurable nature to be able to adapt to the updated hardware setup and requirements.
- User-Friendly Customization: Customize the design and aesthetics of all content on the screens effortlessly.

ICCC Facilities Specification

a. Design Consideration:
   i. The project includes supply & installation of Integrated Command and Control Center (ICCC) and other office set up pertaining to the centre.
   ii. Satisfactory environmental conditions for operator personnel - including noise, air flow, temperature and humidity should be ensured. Adequate space for personnel and equipment for the movements and activities they are required to perform during operation and maintenance, under both normal and emergency conditions.
   iii. In broad, the scope of work and supply shall consist of the following parts
      - All related services for supply, installation, testing
      - Maintenance and warranty throughout project duration
   iv. The agency shall be responsible for safety and security of the installed item till commissioning and final acceptance by Agency or committee appointed by Agency.
   v. Quality assurance & commissioning of the complete system at site to the complete satisfaction of the Agency or committee appointed by Agency.
   vi. Cabling at Site: Entire cabling at ICCC shall be rat protective and insulated. The Agency shall ensure that proper earthing and cooling requirements are met at control centre.
   vii. Network Connectivity: The ICCC shall have dedicated connectivity for display/monitoring of insights and have provision to interface with external systems such as weather stations, news feeds. The Agency should also provision for redundant internet connectivity for failover situations.
   viii. Physical Security at ICCC: Physical security at control Centre shall be maintained using access control device / biometric based authentication. The entire physical security system will be set up based on user authentication and room wise security provisions.
   ix. Control Centre should be equipped with relevant signage. The signage should be easy to read and highlighted in case of any disaster to guide control room staff to safety.

ICCC Platform Specifications

Category	**Requirement**	**Compliance (Yes/No)**
Escalation Matrix	Platform must provide the capability to escalate tasks not completed within a configured stipulated time.	

	Platform must allow multiple escalation levels to escalate events to the next level for quicker resolution.	
	Escalation rules must trigger notifications via SMS and email to users mapped to ongoing escalation levels.	
Distribution Groups/User Roles	Platform must provide the ability to create groups consisting of users from the same or different departments, which can be used for task assignments.	
User and User Group	Platform must allow the Organizational Admin to create custom user roles and users for utilizing ICCC functionalities.	
	Organizational Admin must have access to all platform features.	
	User roles must allow customized access to platform features with options to View, Edit, and Delete.	
	Users derived from roles must be assigned specific organizational nodes as per the hierarchy.	
Reports	Platform must generate customized reports based on geo-corrected images and data requirements selected by authorized users.	
	Platform must allow scheduling of reports from a dedicated dashboard with downloads in PDF and XML formats.	
	Authorized users must be able to view, activate, and deactivate configured reports.	
Events and Incident Management	Platform must allow event definitions to be created, which are triggered by subsystems.	
	Platform must support automation rules by correlating data from subsystems using logical operators for event generation.	
Heat-map Dashboard	Platform must provide a heat-map view of the state based on KPI ranges with color coding and customizable domain-based views.	
	Platform must offer date-based heat-map views and historical visualizations (last week, month, 3 months, etc.).	
Crisis Management	Platform must allow crisis-based or pre-configured event creation with area selection using polygons or organizational structures.	
	Platform must allow creation of event SOPs, categories, and types.	
	Platform must schedule event durations and integrate with field operator mobile apps for operational support.	
Integration Capabilities	Platform must support data connection from multiple sources with diverse protocols and ingestion into databases for visualization and dashboarding.	
KPI and Dashboarding	Platform must allow creation of grid-based KPI widgets for diverse visualizations.	

	Users must be able to change themes, enable/disable elements, and customize layouts (rows, columns).	
	Platform must analyze trends and provide preconfigured KPI dashboards with customization options.	
	Users must configure individual KPIs with mathematical operations across domains, apply thresholds, and link SOPs/notifications for breaches.	
	Platform must provide live statistics dashboards and identify high/low-performing sensors.	
Video-Wall and Video Integration	Platform must display live video feeds in grid systems (up to 8x8) and integrate video sources without limitations.	
	Platform must support video analytics and integration with sensors for actionable intelligence.	

Video Wall Specifications

Sr. No.	Parameter	Specifications	Compliance (Yes/No)
1	Display Size	9mtr x 3.7 mtr/ as actual	
2	Pixel Pitch	1.56 mm or better	
3	Pixel Configuration	1R1G1B	
4	LED Technology	COB(Chip On Board)	
5	Pixel Density	409,600 pixels/m2 or better	
6	Brightness	600 cd/m2 or better	
7	Dimming Capability	0-255 Levels or higher	
8	Contrast Ratio	18000:1 or better	
9	Refresh Rate	3840 Hz or better	
10	Color Processing	18-bit or better	
11	Colors	18 Quadrillion or better	
12	Viewing Angle	H: 170° or better, V: 170° or better	
13	Lifetime	100,000 hrs or better	
14	Power Input	AC 100V-240V	
15	Max. Power Consumption	250 W/m2 or lower	
16	Operating Temperature	-10° ~ 40°C	
17	Operating Humidity	10%~90%RH	
18	Service Access	Front	

19	IP Grade	IP30/IP50	
20	LED Tile/ Cabinet Calibration	LED tiles/cabinets should be calibrated before being supplied. These screens should also be calibrated after the installation to	
		ensure brightness uniformity. Calibration should also be performed as and when it is required during the warranty period. Offered product which does not support dot calibration shall be rejected	
21	Mandatory Indian Certifications(BIS Registration copy to be submitted with the supply)	BIS Registration (Bureau of Indian Standards) As per Standard: IS 13252 (PART 1) :2010. Offered model BIS certificate should be on OEM brand and their own manufacturing unit in India.	
22	Quality/Health & Safety/Environmental Certifications of OEM/OEM subsidiary in India (Copy to be submitted along with the bid	Quality Management System 9001:2015 ,	
		Occupation health & Safety Management System -OHSAS 45001,	
		Environmental Management System 14001: 2015	
23	Control Port	RJ 45/USB	
24	Input	DVI/HDMI	
25	Input Resolution	Full HD or better	
26	Output	RJ45, HDMI	
27	Maximum Load Capacity	As per requirement	
28	Input Voltage	100~240 VAC	
29	Operating Temperature	5~40 Deg. C	
30	Switching	Seamless switching &scaling , fade in/ fade out, PIP function support size & location	
31	Material	MS/Aluminum Extrusion should be used to for the structure to mount the LED walls to ensure precision installation	
32	Brackets	Brackets to fasten the MS/Aluminum extrusion to be made of MS with powder coating	

Network Communication Requirements

Communication network is an important component of the project and needs very careful attention in assessment, planning and implementation. It is important not only to ensure that appropriate connectivity is provisioned within the required timelines but also ensure that it is reliable, secure and supports the required SLA parameters of Latency, Jitter, Packet Loss and Performance.

In order to meet the project and SLA requirements as defined in the RFP, the agency shall provision bandwidth/connectivity requirements phase wise. The network provisioning during the project implementation phase is to be taken care of by agency at no extra cost to the Authority.

a. The agency should provide detailed network architecture of the overall system, incorporating findings of site survey exercise. The network so envisaged should be able to provide real time data streams to the Data Center, DR and ICCC. All the components of the technical network architecture should be as per applicable industry standard.
b. The Agency shall prepare the overall network connectivity plan for this project. The plan shall comprise of deployment of network equipment at the junctions/locations to be connected over network, any clearances required from other government departments for setting up of the entire network.
c. The network architecture proposed should be scalable and in adherence to network security standards. The last mile connection for IoT devices shall be on proven industry interfaces. Last Mile is to be defined as “the access link from the PoP location – (as per Telco Standards) to the field device”.
d. The actual bandwidth requirement to cater to the RFP requirements and to meet SLAs would be calculated by the bidder and the same shall be clearly specified in the technical bid with detailed calculations.
e. Authority also requires the agency to meet the parameters of video feed quality; security & performance and thus agencies should factor the same while designing the solution.
f. Authority reserves its right to ask the agency to increase the bandwidth if the provided bandwidth is not sufficient to give the functionality of the system mentioned in the RFP and to adhere to the SLAs.
g. The agency shall submit detailed installation report for each component of the solution. The report shall be utilized during the acceptance-testing phase to verify the actual quantity of the equipment supplied and commissioned including network bandwidth performance.
h. The agency shall ensure the required performance for network and adherence to SLA for the complete project. In case agency has to sign a contract with Telecom Service Provider(s)and Telecommunication guidelines of Government of India require the Authority to place Purchase Order to the Telecom Service Provider for bandwidth, Authority shall do so.
i. For MPLS/ Leased Line Services: The Network service provider/ Internet Service Provider (Class A) should have a valid National Long Distance (NLD) License from Govt. of India from last 5 years and must be valid during the project period.

4.5 Technical Specifications:

Technical Specification for Cameras, UPS, Workstation, MF Printer

4.5.1 Body Worn Camera

S.No.	Parameter	Min. Requirement	Compliance (Yes/ No)	Remarks
	Make			
	Model			
	Components in the System	Body Worn Camera System (BWCS) consist of a single device comprising a Camera, Rechargeable Battery		
	Function	To capture clear, high-definition video, audio and still photographs from the perspective of the officer wearing the BWCS (Point of View) Android 9 or Linux or better operating system		
	Camera Mounting	Comfortable to wear on the body, Mounted / Installed on the Shoulder or shirt front or shirt pocket etc with ambidextrous design mounting clip/ attachment to keep the camera stable.		
	Video Type	Colour Video		
	Camera Image Sensing Capacity (Picture Mode) (Mega Pixels)	30 MP or better		
	Recording Resolution	1920 x 1080 Pixel		
	Field of View of Lens	Horizontal:110° Vertical:70° Diagonal: 119°		
	Camera Sensor/ Imager	CMOS		
	Camera Lens	Fixed lens		

	Recording Speed (Minimum)	30 fps		
	Day & Night Camera with Night Vision Infrared LED Light	Yes		
	Minimum distance of IR Illumination in complete darkness	10 metres		
	Display Screen	With		
	Screen size/ type	2-inch LCD or better		
	Capable to take photographs while video recording	Yes		
	Date and Time Stamping onto videos/ photographs	Yes		
	GPS	Yes		
	Pre-event Recording time (Prior to press of Recording button)	30 seconds		
	In-Built Wi-Fi	Yes		
	Connectivity Interface	Wi-Fi 802.11 b/g/n, 3G , 4G , USB		
	Frequency bands supported	LTE FDD: B1/B3/B5/B8 LTE TDD: B34/B38/B39/B40/B4 1 WCDMA: B1/B8		
	Face detection, Face recognition & comparison	Support		
	Supported picture or image format	JPEG		

	Supported Video Compression format	H.264, H.265		
	Video compression frame rate	Up to 30 fps		
	Overall Weight (Including Battery)	Should be light weighted preferably less than 200 grams		
	Anti-fall with 2m height	Support		
	Security Features	User not permitted to delete/ edit/overwrite of videos / photographs		
	Storage type	32 GB built in.		
	Storage capacity	128 GB		
	Data Transfer	USB 2.0		
	Source of Power	Powered by rechargeable cells		
	Bluetooth	Support		
	Button	ON/OFF, Capture, Record, Tape, SOS, PTT		
	Battery	Inclusive in the supply		
	Chemistry of rechargeable Battery	Li-ion		
	Battery Capacity	3100mAh		
	Active Battery Back-up in continuous video mode	8 hours		

	Battery recharge time from empty to full capacity	4 hours		
	Separate Battery charger (Inclusive in the supply)	Yes		
	Protection against Dust, Water	IP 67		
	Certificate	BIS, CE, FCC, IP67 and RoHS (Quoted models should have BIS in same brand/OEM name supplying Devices)		
Docking Station:				
S.No.	**Parameter**	**Min. Requirement**	**Compliance (Yes/ No)**	**Remarks**
1	**Make**			
2	**Model**			
3	Device type	Dock Station with BIS certification (Quoted models should have BIS in same brand/OEM name supplying Devices)		
4	Body Camera	Support 8 body cameras in standard.		
5	Functions	Should support Auto charging		
		Should support auto uploading of body camera data (picture, video, and audio), and clearing the storage space of body camera automatically		
		Should support Log management to record all the operation logs. Multi- user management. Multi-users can be associated with one dock station		

		Should support important data lock of body camera		
		Should support indicators on docking station or body worn camera for slot status, while charging, while transferring data, and when charging of BWC is completed.		
		Should support file search in multiple modes, and video, audio, and picture playback		
7	Memory	2 GB		
8	Screen Size	10-inch or better touchscreen with 1280 × 800 or better resolution		
9	Operating System	Linux or Android 5.1.1 or better		
10	Feature	Simultaneously charge and collect data from body worn cameras.		
11	Data Protection	Should Support data protection in sudden power cut-off		
15	Lock Important Files	Locks important data of body camera to avoid being deleted		
16	Storage	Standard 2 TB storage capacity, Supports two hard disks. Up to 8 TB for each disk		
17	USB Interface	2		
18	Loudspeaker	Supported		
19	Ingress Protection	IP20		
20	External Interface	RJ45		

21	Working Temperature	-10 °C to +55 °C		
22	Storage Temperature	-25 °C to 50 °C		
23	Working Humidity	~90 %		
24	Mount	Should Supports wall mount/mobile mount/desktop mount		
Video Management Software for Body Worn Camera				
S.No.	**Parameter**		**Compliance (Yes/ No)**	**Remarks**
	Device Management			
1	Support adding detected online mobile devices.			
2	Support accessing mobile devices when the devices are connected to the Internet or Wi-Fi.			
3	Support synchronizing the time zone with that of the mobile device. Support manually setting the time zone of the mobile device.			
4	Support getting and displaying device information for device management, including device serial No., firmware version, the encoding device's channels for linking with cameras, and alarm input/output information.			
5	Support jumping to the device's Web page for remote configuration, including configuring Parameters of the device and the linked channels.			
	Map Operation			
1	Supports displaying the map in full-screen mode or on the auxiliary screen.			
	Statistics and Report			
1	Support the overview of mobile monitoring statistics and report.			
2	Support generating the report on GPS-related information of specific vehicles in a specific period.			

3	Support displaying simultaneously or separately the GPS report times of all vehicles or selected vehicles.		
5	Support generating the report on the online rate of the mobile devices in a specific period.		
6	Support exporting the report.		
	Body-worn Camera		
1	Support adding body cameras		
2	Support displaying body cameras on Google Map. Support displaying body cameras in a selected area.		
3	Support live view, playback, and two-way audio for body cameras.		
4	Support linkage actions on the client for body camera events.		
	Dock Station		
1	Support managing dock station groups. Support importing persons and displaying person permission levels.		
2	Support three-level permission management: dock station group, super user, and person.		
3	Support setting person as super user"		
4	Support applying person information (which should correspond to the account information of body camera) to the dock station		
5	Support managing profiles and applying profiles to dock stations		
6	Support configuring copyback time for dock stations. Support setting storage location to desired storage device.		

4.5.2 Thermal Camera

Sr. No.	Parameter	Min. Requirement	Compliance (Yes/ No)	Remarks
1	Camera Type	Thermal Camera		
2	Functionalities	24 X 7 thermal based detection		

3	Detection Zone	It should detect objects such as animals, humans and vehicles in detection zone		
4	Frame Rate	30fps		
5	Compression	H.264, H.265		
6	Detection Distance for Vehicle Presence	Up-to 750 meters		
7	Spectral Range	8~14um8~14um		
8	Storage	TF card/Built-in micro SD, up to 128 GB		
9	Ingress Protection	IP 66 or higher		
10	Working Temperature	-40 °C ~ 60 °C		

4.5.5 <u>UPS – 10 KVA (N+1 Configuration with Actual Load)</u>

Sl. No.	Technical Specifications	Compliance (Yes/No)
1	Transformer less, IGBT Rectifier & IGBT Inverter Modular Hot Scalable UPS System of 10 kVA UPS in N+1 architecture with 30 Min back up.	
2	Each 10 kVA UPS Frame shall be of modular architecture with 3 phase sub power modules	
3	Battery along with rack and connecting accessories to be provided for min 30 Minutes back up at full load.	
4	Each 10 kVA UPS shall be provided with Phase Sequence Correction at Input i.e. In case of Phase reversal at Input, UPS shall continue to operate in Double Conversion Mode of operation without going to battery mode.	
5	Back-feed Protection shall be provided at Input and Bypass with individual UPS Frame	
A	**Modes of Operation:**	
6	• Normal: The UPS system shall continuously supply power to the critical load as per IEC 62040-3 Class 1 Online Mode of Operation. The UPS shall be UL certified (Certificate to be submitted)	
7	• Battery: Upon failure of the utility AC power source, the critical load shall be supplied by the inverter, which, without any interruption, shall obtain its power from the battery.	

8	• Recharge: Upon restoration of the utility AC power source (prior to complete battery discharge), the PFC rectifier shall power the inverter and simultaneously recharge the battery.	
9	• Static bypass: The static bypass switch shall be used to transfer the load to the bypass without interruption to the critical power load. This shall be accomplished by turning the inverter off. Automatic re-transfer or forward transfer of the load shall be accomplished by turning the inverter on.	
10	• Maintenance bypass: In maintenance bypass the load is supplied with unconditioned power from the bypass input included in the UPS.	
11	• Static Bypass Mode with Power Factor Improvement & Harmonic Mitigation: UPS shall be capable to mitigate Harmonics (THDI) to < 5% and Power Factor Improvement to 0.99 at full load while UPS is operating in Static Bypass Path. The Efficiency achieved in this mode shall be ≥ 98% from 50% Loading to 100% Loading condition	
12	PCB's which are required for the function of UPS shall be 100% conformally coated.	
C	**System input**	
13	• Nominal input voltage rating: 380 V / 400 V / 415 V 3-phase	
14	• Input voltage window at 400 V: 340 V to 460 V	
15	• Earthing principle: [TN-S] [TN-C] [TT] or [IT].	
16	• Input frequency range: 40-70 Hz	
17	• Input power factor: 1. 0.99 at load >25% 2. 0.95 at load >15%	
18	• Total harmonic distortion (THDI): < 3% at 100 % rated Load	
D	**System output**	
19	• Nominal output voltage rating: 400 V 3-phase	
20	• Output voltage tolerance: +/- 1% for symmetrical loads	
21	• Dynamic load response: 1. +/- 5% after 2 ms 2. +/- 1% after 50 ms	
22	• Output frequency: 50 Hz.	
23	• Output voltage harmonic distortion: <5% at 100% non-linear load	

24	• Overload capability: 1. 150% for 1 minute (normal operation). 2. 125% for 10 minutes (normal operation). 3. 110% Continuous at Bypass Operation. In case vendor does not meet, next higher rating shall be provided to meet the requirement.	
25	• Short Circuit Handling Capability of the Inverter: 250% of nominal current for 1000 milliseconds.	
26	• Output power factor: 1.0 i.e. kVA = kW.	
27	• Audible noise at full load: Not more than 65 dBA at 100% load	
E	**System AC-AC efficiency**:	
28	• Greater than equal to i.e. ≥ 96 % in Online Double Conversion at 50% load to 75% Loading condition.	
29	• Greater than equal to i.e. ≥ 98.5 % in Static Bypass at 50% load to 100% Loading condition along with PF Correction to 0.99 at Input & Harmonic Correction (THDI) to < 5% at Input.	
F	**Mechanical**	
30	• The cabling section shall be large enough to accept Copper and Aluminium cables as well. Incase Aluminium Cable termination is not possible, vendor to provide separate cube/box with input & output breakers & busbars with each UPS module.	
31	• Each UPS shall be provided with minimum IP20 ingress protection.	

4.5.6 <u>Workstations</u>

Sr. No.	**Parameter**	**Minimum Specifications**	**Compliance (Yes/No)**
1	Processor	Intel i7 11th generation/AMD Rayzen or Higher latest Processor	
2	Chipset	Latest series 64bit Chipset	
3	Cores	6 Cores or Higher	
4	RAM	Minimum 16 GB DDR4 or latest	
5	Graphics card	Minimum Graphics card with 1 GB or higher video memory (non- shared)	

6	HDD	256 GB, PCIe NVMe, SSD and 1TB SATA SSD	
7	Media Drive	No CD / DVD Drive	
8	Network interface	10/100/1000 Mbps autosensing on board integrated RJ-45 Ethernet port.	
9	Audio	Line/Mic IN, Line-out/Spr Out (3.5 mm)	
10	Ports	Minimum 6 USB ports (out of that 2 in front), HDMI Port and Mini DP Port	
11	Keyboard	yes	
12	Mouse	yes	
13	Monitor	One Monitor of 22" TFT LED monitor, Minimum 1920 x 1080 resolution, 5 ms or better response time, TCO 05 (or higher) certified. The TFT Monitor, CPU, Mouse and keyboard workstation shall be of same make.	
14	Certification	Energy star 5.0/BEE star certified	
15	Operating System	64 bit pre-loaded OS Latest windows 11 pro or latest and MSOffice	
16	Security	BIOS controlled electro-mechanical internal chassis lock for the system.	
17	Warranty	Hardware /Software should have Minimum 5-year warranty.	

4.5.7 Multifunction Printer

Sr. No.	Parameter	Minimum Specifications	Compliance (Yes/No)
1	Function	Printer, Scanner, Copier all- in-one	
Printer			
2	Printing Speed	Min. 27 ppm or Higher	
3	Print Type	Monochrome	
4	Duty Cycle	Min 50000 pages/month	

5	2-Side Printing	Automatic	
6	Automatic Paper Sensor	Yes	
Scanner			
7	Scanner type	Flat Bed with ADF for Duplex documents	
8	Scan File Format	JPEG, PDF,TIFF	
Copier			
9	Copy Speed	Min. 25 ppm	
Paper Feeder			
10	Total No. of Trays	Minimum 1	
11	Input paper Handling	Min. 100-sheet standard	
12	Output Paper Handling	Min. 100-sheet	
13	Media Size Support	A4, A5, Legal, Letter	
Network Capabilities			
14	Interface/Connectivity	USB 2.0 and 10/100 Ethernet	
15	OS Compatibility	Windows 10	
16	Accessories	Power cord; Ethernet Cable (patch cord), USB cable;	

4.5.8 Minimum Data Centre Components	
1	Rack Server for Web and Mobile App
2	Controller Node
3	Server with GPU
4	TOR Switch
5	Storage
6	Switches (Ethernet / IB Switch)
7	Server Rack
8	Performance Monitoring Tools
9	Hypervisor platform
10	Other required Components & Accessories (such as software, dependent third-party software, APIs, Licenses, Active and passive components, etc. to complete the solution deployment)
Note	a) The Proposed solution deployment should be designed under High Availability architecture. b) Above mentioned minimum bill of material should be quoted by the bidder. Any component / hardware / software / license required to complete the solution has to be provided by the bidder and no additional cost will be borne by the Tenderer / department. c) Any additional manpower required for infrastructure / solution requirement needs to be catered by the bidder at no cost to GOG. d) Any items required to complete the solution has to be provided by the bidder at no cost to GOG.

4.6 Manpower Detail

As per timelines mentioned in milestone, the bidder should deploy the following technical resources for the tenure of 5 Year. The qualification and experience of proposed resources shall be as mentioned in Annexure.

S N	Post	Min. Quantity
1	Project Manager	1
2	Remote Sensing	2
3	Forest Expert	1
4	GIS Expert	2
5	ICCC Expert	1
6	IT Support Expert	2

Note:

a. The resources mentioned in ICCC will not be required from day 1 and they should be deployed after ICCC setup. The resources proposed in ICCC will be working with Forest Department for overall coordination, monitoring and in support. The Agency will have separate manpower for the project execution.

b. The bidder will have to deploy additional SMEs during the course of the project period as per task execution and approved by the department. The manpower cost shall be paid as on actual as per the SME/ Resource rate discovery under this bid.

c. The resources may also be assigned other tasks as and when required as per need and demand of the project. The agency shall be responsible to maintain SLA’s as per the bid document.

4.7 Training Management

1. It would be required by the bidder to develop the test cases or training use cases based on the real-time data or as available. The training should be based on interactive and practical sessions with Real Life scenarios and Hands-on exposure.
2. The training is envisaged to be organized at central location of User Department in Gujarat. However, the suggested location of the training will be shared by GIL or the user department post deployment of the proposed solution and training plan by the proposer.
3. The training calendar shall be made based on the assumptions by keeping at least one week break/gap after completion of each training batch, with some test cases/problem statement to each/all participant(s) for hands on experience.
4. Each training day shall be assumed as 8 hours/day and duration of Training Day shall exclude all / any breaks.
5. The batch size for the training may vary from 15 to 20 participants per batch.
6. The bidder will develop the training content for face to face and e-Learning. If required, the training content will be used by GIL even after completion of the contract period. GIL reserves the right to use and modify the content of training for its internal purposes.

4.8 Knowledge Transfer

1. At the end of the Contract period, the agency will be required to provide necessary handholding and transition support to user department staff or any other agency that is selected for maintaining the system post the expiry of the Contract. 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 user department or new agency with respect to the working / performance levels of the infrastructure, conducting training sessions etc.
2. 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.

4.9 Responsibilities of GIL

Is the owner of the project; The Bidder shall be responsible to execute the scope effectively as outlined in the document However, the department's support in several key roles would be essential. Here are some critical roles and contributions expected from the department:

- The department shall provide the necessary support to the Agency in terms of providing information, plantation journals, maps, measurement books, discussing prescriptions and all relevant records pertaining to project.
- Department will monitor the work of the agency and suggest changes and mid-course corrections, if required.

- Department will verify the data collected by the bidder.
- The department may need to facilitate API integration by providing access to existing state and central systems to ensure seamless data flow and compatibility.
- Department will provide complete support in historic forest data including satellite imagery, ground truth information, previous encroachment records, and existing species distribution maps, as per the availability of the data as it is crucial for accuracy in analytics and mapping.
- As the bidder is responsible for drone surveys, the department will play a key role in obtaining necessary regulatory approvals for drone flights and ensuring compliance with UAV regulations.
- The training will be provided by the bidder to user department. Necessary facilitate such as training room with proper sitting arrangements and power supply.

SECTION – 5

1 Terms And Procedures of Payment

The GIL / User Department shall pay the successful agency in the following manner and at the following times, on the basis of the Price Breakdown given in this section on terms of Payment. Payments will be made in Indian currencies unless otherwise agreed between the Parties.

Payment during project stage and Project Implementation Schedule and Penalty:

1 Payment terms during project stage will be on project per milestone achieved in the implementation as mentioned in RFP document.

2 Payment during O&M services (post operationalization) will be equated quarterly payments calculated based on quoted service charges under O&M.

3 Payment during all stages of the contract will be subject to deduction of penalties for short comings in performance observed by GIL / User Departments / Third Party Audit agency.

SN	Particulars of Payment	Completion Timeline (in Weeks)	Payment Terms	Related Penalties
	T = Date of Award of GEM Contract			
1	a. Project Kick-off, b. Sharing details of Single point of contact (SPOC) and Escalation matrix	T + 1 Week	NILL	EMD may be forfeited, and contract may be terminated or part thereof.
2	Submission of PBG	T + 2 Weeks	NILL	EMD may be forfeited, and contract may be terminated or part thereof.
Monitoring Software Part (Sr. No-01 mentioned in Annexure-02)				
3	Application Design Document with detailed BOM, HLD, DFD, Deployment Plan, GUI Design, Testing Plan, Risk Management Plan, Change management plan, O&M Plan, etc.	T + 3 Weeks	10% of the respective Value	A penalty of 0.1% of contract value for delay for first Week or part thereof. From second weeks Onwards, A penalty of 0.2% of contract value for delay for each Week or part thereof. Delay beyond 4 Weeks, the TENDERER may also terminate the Work Order/Contract and forfeit the PBG.
4	Hosting of complete Mobile and Web application platform solution at GSDC/department office	T +8 Weeks	40% of the respective Value	Penalty of 0.2% of the delayed component value for delay for first Week or part thereof. Penalty of 0.5% of delayed component value for delay for each week or part thereof. Delay beyond 4 Weeks, the TENDERER may also terminate the Work Order/Contract and forfeit the PBG.
5	Successful completion of FAT by User Department	T + 09 Weeks	30% of the respective Value	Penalty of 0.2% of the delayed component value for delay for first Week or part thereof. Penalty of 0.5% of delayed component value for delay for each week or part thereof. Delay beyond 4 Weeks, the TENDERER may also terminate the Work Order/Contract and forfeit the PBG.
6	Application stabilization of the deployed Solution, Security certification and Go-Live.	T + 10 Weeks	20% of the respective Value	Penalty of 0.2% of the delayed component value for delay for first Week or part thereof. Penalty of 0.5% of delayed component value for delay for each week or part thereof. Delay beyond 4 Weeks, the TENDERER may also terminate the Work Order/Contract and forfeit the PBG.
SITC of Central ICCC , conference room, Manager cabin, IoTs and Integration with ICCC (Sr. No-02,03,04,05,06,07 mentioned in Annexure-02)				
4	Delivery of all Hardware's, Software's, Licenses and all other required components	T + 4 Weeks	50% of the respective Value	Penalty of 0.2% of the delayed component value for delay for first Week or part thereof. Penalty of 0.5% of delayed component value for delay for each week or part thereof. Delay beyond 4 Weeks, the TENDERER may also terminate the Work Order/Contract and forfeit the PBG.
5	SITC of all Hardware's, Software's, Licenses and all other required components as per Project requirement and as mentioned scope in the RFP.	T + 6 Weeks	20% of the respective Value	Penalty of 0.2% of the delayed component value for delay for first Week or part thereof. Penalty of 0.5% of delayed component value for delay for each week or part thereof. Delay beyond 4 Weeks, the

				TENDERER may also terminate the Work Order/Contract and forfeit the PBG.
6	Successful completion of FAT by User Department	T + 7 Weeks	30% of the respective Value	Penalty of 0.2% of the delayed component value for delay for first Week or part thereof. Penalty of 0.5% of delayed component value for delay for each week or part thereof. Delay beyond 4 Weeks, the TENDERER may also terminate the Work Order/Contract and forfeit the PBG.
Operations and Maintenance Phase (Sr. No-08,09 mentioned in Annexure-02)				
7	Completion of Training to User Departments	T + 12 Weeks	NIL	A penalty of INR 25,000/-for delay for first Week or part thereof. From second weeks Onwards, A penalty of INR 30,000/- for delay for each week or part thereof.
8	Operations and Maintenance (Sr. no. 9 mentioned in Annexure-2 BOM)	5 years after Go-Live & FAT	Equated quarterly payments of OPEX value, after the end of each quarter after Go- Live	SLA will be applicable during this period.
9	Manpower Cost (Sr. no.10 Annexure-2 BOM)	Till Contract period	Equated quarterly payments of OPEX value, after the end of each quarter	SLA will be applicable during this period.
10	Security incident/threat identified In App/Server/ Component provided by agency	Every Incident	Nil	A penalty of 0.02% of total Project value for every occurrence.

Note:

1. No advance payment will be made.
2. All payments will be subject to penalties for delays, as specified in the Service Level Agreement (SLA). In case of any penalties applied due to delays or non-compliance with SLAs, the corresponding deductions will be made before processing payments.
3. The financial offer submitted by the Bidder must be in conformity with the payment terms proposed in the tender.
4. Each payment shall be made on receipt of separate invoice on the successful completion of payment schedule.
5. The selected proposer's request for payment shall be made to the purchaser in writing, accompanied with the supporting documents describing, as appropriate, the services performed, and by the required documents submitted pursuant to general conditions of the contract and upon fulfilment of all the obligations stipulated in the Contract.
6. Documents required, whichever applicable along with documents for desired deliverables, to be submitted to GIL for Payment (in Triplicate):
7. Initial training completion certificate signed by nodal officer: This shall be a document mentioning the start and end date of the program, along with information about batch attendance, training material, etc.
8. Due payments shall be made promptly by the purchaser, generally within thirty (30) days after submission of an invoice and request for payment by the selected proposer, and the purchaser has accepted it.

9. The currency or currencies in which payments shall be made to the selected proposer under this Contract shall be Indian Rupees (INR) only.

10. All remittance charges will be borne by the selected proposer.

11. In case of disputed items, the disputed amount shall be withheld and will be paid only after settlement of the dispute.

12. Any penalties and/or liquidated damages, as applicable, for delay and non-performance, as mentioned in this bidding document, will be deducted from the payments for the respective deliverables.

13. Taxes, as applicable, will be deducted/paid as per the prevalent rules and regulations.

SECTION – 6

2 Penalties and Service Level Agreement (SLA)

The purpose of this Service Level Agreement (hereinafter referred to as SLA) is to clearly define the levels of service, which shall be provided by the SP to tenderer for the duration of the contract for providing Applications, Operation and Maintenance support against the stated scope of work. Tenderer shall regularly review the performance of the services being provided by the SP and the effectiveness of this SLA.

6.1Definitions

For purposes of this Service Level Agreement, the definitions and terms as specified in the contract along with the following terms shall have the meanings as set forth below:

a. Business Hours of Purchaser is 09:00 h to 18:30 hrs.

b. Business Days: All Working Days, excluding (2nd Saturdays, 4th Saturdays and all Sundays) and holidays as identified by Purchaser / Government Departments.

c. “Incident” refers to any event / abnormalities in the functioning of TENDERER specified services that may lead to disruption in normal operations of TENDERER services.

d. “Response Time” shall mean the time taken after the incident has been reported at the concerned reporting center in resolving (diagnosing, troubleshooting and fixing) or escalating to (the second level, getting the confirmatory details about the same and conveying the same to the end user), the services related troubles during the first level escalation.

e. The “Resolution Time” shall mean the time taken for resolution of the problem and this includes provisioning of the work around to immediately recover the situation. The resolution time shall vary based on the severity of the incident reported.

f. “Availability” means the time for which the services and facilities are available for conducting operations of email service. Availability is defined as: {(Scheduled Operation Time – Service Downtime)/ (Scheduled Operation Time)} * 100%

g. Definitions of Severity Level:

Severity	Definition
1	Showstoppers involving major failure in the system/solution. There are no usable workarounds available to troubleshoot the problem.
2	Users face severe functional restrictions in the system/solution irrespective of the cause. Workarounds are time consuming.
3	Moderate functional restrictions in the system/solution irrespective of the cause. Has a convenient and readily available workaround. Affects a few users.
4	Requiring cosmetic functional changes. Does not require any workaround. It may include user query/suggestions but has no business impact

6.2 Interpretation & General Instructions

a) At the beginning of the contract, the SLA parameters and metrics thereof would be established by Purchaser in consultation with the selected bidder which would be reviewed on an annual basis along with the Corrective Action & Preventive Action (CAPA) plan.

b) SLA parameters shall be monitored on a quarterly basis as per the individual SLA parameter requirements. In case the service levels cannot be achieved at service levels defined in the tables below, it shall result in a breach of contract and shall invoke penalties.

c) Penalties are mentioned as a percentage of certain components of cost.

d) Purchaser can take appropriate action including termination of the contract if –
   (i) Penalties calculations exceed 10% of the quarterly payment for two consecutive quarter.

e) The Bidder along with the product OEM's should support and prepare Root cause analysis (RCA) for all cases of Cyber Security Incidents and shared with Purchaser within 72 hours. Time extension can be granted by the Purchaser depending on the severity of the incident on request of the bidder. For any exceptions or SLA breach beyond the control of the bidder, the bidder may submit the RCA along with a justification, which may be considered by Purchaser. In case the RCA establishes that the breach on SLA was on account of email service issues, the bidder would be liable for the applicable penalty.

f) Root cause analysis (RCA) should be prepared for all cases of Severity 1 incidents causing email service unavailability or disruption. The bidder can work with OEM to provide the RCA.

g) For certain incidents, RCA may be carried out by Purchaser (or Purchaser appointed agency).

The Proposed solution should have its own comprehensive monitoring features. The bidder should use the same tool to do an integrated monitoring of the service levels for the deployed solution.

The bidder needs to carry out real-time monitoring as well as reporting of SLA parameters and will also be required to provide an integrated and automated monitoring report to Purchaser on monthly basis, or as requested by Purchaser. All SLAs to the extent possible should be monitored through the automated tools provided by the bidder.

6.3 Categories Of SLA's

This SLA document provides for minimum level of services required as per contractual obligations based on performance indicators and measurements thereof. The SP shall ensure provisioning of all required services while monitoring the performance of the same to effectively comply with the performance levels. The services provided by the SP shall be reviewed by TENDERER against this SLA. The SP shall:

- Discuss escalated problems, new issues and matters still outstanding for resolution.
- Review of statistics related to rectification of outstanding faults and agreed changes.
- Obtain suggestions for changes to improve the service levels.

The following measurements and targets shall be used to track and report performance on a regular basis. The targets shown in the following table are applicable for the duration of the contract.

6.4 Service and Performance Penalty During O&M

The selected agency has to design the solution in such a way that the system uptime and service availability should be min 99.9%. The system uptime shall be measured per equipment on quarterly basis.

SN	Service Category	Breach Threshold	Penalty Amount
1	Service Availability	System availability falling below 99.9% in quarter	0.01% of contract value per hour of system unavailability exceeding the Threshold. The agency has to provide system generated monitoring report.
2	Incident Resolution	Every Incident shall be logged with the priority Level and should be resolved in defined timeline. • Priority Level 1 Incident - Within 1 hour • Priority Level 2 Incident - Within 4 hours • Priority Level 3 Incident - Within 12 hours • Priority Level 4 Incident - Within 24 hours	Level 1 Incident 0.01% of Quarterly payment for every 1 hour or part thereof delay in resolution. Level 2 Incident 0.01% of Quarterly payment for every 4 hours or part thereof delay in resolution. Level 3 Incident 0.01% of Quarterly payment for every 12 hours or part thereof delay in resolution. Level 4 Incident 0.01% of Quarterly payment for every 24 hours or part thereof delay in resolution
3	Security and Data Protection	Exceeding 24 hours for resolution time to security incidents	0.02% of contract value for each security vulnerability not remediated within timeframe specified by CERT-In which is immediate for Critical level, 24 hours for High level, 7 days for Medium level and 15 days for Low level of severity
		Re-occurrence of vulnerability	5% of contract value for each

		for which fixes were applied.	security vulnerability discovered
4	Data Backup and Recovery	Failure to perform scheduled backups or inability to recover data	5% of contract value for each missed backup
5	Support and Escalation	Exceeding 24 hours for fulfilment of support request or resolution of issues	INR 5,000/- per ticket per hour exceeding 24 hours

6.5 Deliverable Reports related SLA and Penalties

<table>
<tr><th>#</th><th>SLA</th><th>Timelines/ Event</th><th>Applicable Penalty</th></tr>
<tr><td>1</td><td>Weekly / Monthly / Seasonal Reports / Advisories</td><td>On 1st working day after completion of respective period.</td><td>0.01% of OPEX value per day for delay in submission of report.</td></tr>
<tr><td>2</td><td>Annual Reports / Advisories</td><td>Within 1 week after completion of Year (Year-end date as defined by the user department).</td><td>0.01% of OPEX value per day for delay in submission of report after 1 week from year end date.

From second weeks Onwards, A penalty of 0.02% of OPEX value for delay for each day.</td></tr>
<tr><td>3</td><td>Reports on Demand</td><td>On Demand by user Department</td><td>After mutually agreed deadline INR 10,000/- per day for delay in submission of report.</td></tr>
<tr><td>4</td><td>Quality or Accuracy rate of All Generated Reports / Advisories</td><td>Validations of outputs generated on a sampling basis should be with over all accurafcy of 80%</td><td>If the accuracy rate falls below 80% for any Reports / Advisory, a penalty % on total quarterly payment of O&M will be applied.
<table>
<tr><td>Accuracy rate fall Count</td><td>Penalty % of total quarterly payment</td></tr>
<tr><td><=2</td><td>1%</td></tr>
<tr><td>>2 and <=4</td><td>5%</td></tr>
<tr><td>>4 and <=6</td><td>10%</td></tr>
</table>
Accuracy rate fall Count beyond 6, the TENDERER may also terminate the Work Order/Contract and forfeit the PBG.</td></tr>
<tr><td>5</td><td>Security Audit</td><td>Every six (6) months.</td><td>After due date of audit report submission, a penalty of 0.02% of Project value for delay for first Week or part thereof</td></tr>
</table>

		(Audit report to be submitted in 2 Weeks after completion of six month)	From second weeks Onwards, A penalty of 0.05% of Project value for delay for each day. Delay beyond 4 Weeks, the TENDERER may also terminate the Work Order/Contract and forfeit the PBG.

Note: The agency is required to provide the Authority Any reports asked by Authority at any period of time.

6.6 SLAs for Patch management / System Upgrades

All patches for released, to be tested for vulnerabilities, compatibility and any issues that may occur on deployment as defined in Patch Management Process. The patch cycle shall begin from the time of release of patches, testing, approval by purchaser as per change management and patch management processes and deployment on 100% of the target systems (Applications, Operating Systems, End-user devices, Network and Security components and tools, etc.). The bidder shall submit a report on the completion of patch activity.

SLA shall be calculated on actual delay time for the complete patch cycles on a quarterly basis for each patch from the date of release of patch by OEM. Detailed process should be discussed with the stakeholders and defined in the Operations Manual.

Patches shall be deployed on 100% of the system based on priority of the patches as per timelines defined below.

SR#	Priority	Timelines for complete Patch Cycle
1	Critical	1 day
2	High	3 days
3	Medium	30 days
4	Low	90 days

#	Target	Service Level	Impact Level/Penalty
1.	Patches shall be deployed on 100% of the system based on priority of the patches as per timelines defined	=100%	Nil
		>= 99% & < 100%	0.2% of the total Quarterly billing amount
		>= 98% & < 99%	0.5% of the total Quarterly billing amount
		>= 97% & < 98%	1% of the total Quarterly billing amount
		< 97%	2% of the total Quarterly billing amount

The bidder shall be responsible to upgrade the system/firmware of all applicable systems such as compute, storage, network components, security components, monitoring tools, and any other applicable device or tool used for providing forest management solution on a half-yearly basis. SLA shall be measured on delay of firmware upgrade in each applicable system component on a half-yearly basis.

#	Target	Service Level	Impact Level/Penalty
1.	100% systems upgraded within the half-year as applicable	=100%	Nil
		>= 99% & < 100%	0.2% of the total Quarterly billing amount
		>= 98% & < 99%	0.5% of the total Quarterly billing amount
		>= 97% & < 98%	1% of the total Quarterly billing

			amount
		<97%	2% of the total Quarterly billing amount

6.7 SLAs for Change Management

Sr. No.	Definition & Target	Service Level	Impact Level
1.	Changes as per the change request	100% of successful change implementation as per agreed timelines for each change request	Nil
		Delay in implementation of changes against agreed timelines for each change request	2% of the total Quarterly billing amount for each week of delay
2.	Unauthorized and un-approved changes done to the system without prior intimation and approval from Purchaser. Changes will be tracked through Configuration Changes and Compliance Monitoring Tool Target: No unauthorized or unapproved or unplanned change	Per unauthorized/ un-approved/un-planned change	5% of the total Quarterly billing amount

Note: Change management plan and timeline shall be mutually agreed between the purchaser and the selected agency.

6.8 Manpower related SLA and Penalties:

1. Availability of the min required manpower should be 100%. The agency has to implement the attendance system and share the attendance report of each person deployed as part of team on monthly basis with the user department.

2. The agency is not allowed to replace those resources whose profile has been submitted at the time of Technical Presentation. Further in the event where the bidder is not able to retain the resources quoted in the bid, then the replacement must be pre-approved. For replacement, a panel consisting of 3 times the number of positions shall be submitted. TENDERER has a right to reject entire panel and seek substitute panel in the same 3 times proportion. Before replacing a resource, minimum two months' time to TENDERER along with panel has to be given to choose the substitution from the panel else penalties and pro-rata deduction in the quarterly fees will be made. We encourage the successful bidder to have a preapproved backup of resources for substitution for each of the positions.

3. Replacement of a profile by the agency (only one replacement per technical profile – with equal or higher qualification and experience – would be permitted per year)

4. Prior Intimated Leave of absence will be allowed: If a resource proceeding on leave or becoming absent is replaced with a resource approved by authority, then such substitution will not be treated as absence.

For every SLA non-compliance reported and proved, there shall be a penalty as given below:

#	SLA	Timelines/ Event	Applicable Penalty
1	Mentioned resources in this RFP deployed by the agency	From Go-live date	No penalty- till one week After one week, Rs. 5000/- per resource per day for each day delay from stated timelines.
2	Replacement of resources by the agency on formal submission of resignation by the resource in the company.	There should be minimum 15 days overlap between the new deployed resource and the replaced resource.	No penalty- On timely replacement. Rs. 5000/- per resource per day for each day delay from stated timelines.
3	The deployed resources shall not be engaged in any activity other than that assigned by the TENDERER	-	Penalty of Rs. 50,000 per resource may be imposed on breach of SLA. On consecutive breach of 03 times may lead to termination of the contract.
4	Absence without prior approval from the TENDERER.	-	Penalty of Rs. 5000/- per resource per day shall be imposed.

Note:

1 **Part thereof meaning:** if there is a delay of 9 days in the delivery then the penalty will be calculated as a (9/7)*Penalty Amount.

2 Calculation of Penalty will be done on periodic basis as defined in this document.

3 The maximum penalty at any point of time on an additive basis in any quarter shall not exceed 10% of Total Quarterly Payable. The penalties, if any, will be recovered against the quarterly payment invoice submitted by the agency. If the penalty exceeds for the two consecutive Quarter, then notwithstanding anything contained herein, the Purchaser may take appropriate action including the termination of the contract and forfeiting of the Performance Guarantee.

4 The Maximum cumulative penalty under SLA will be capped at 10% of the contract cost.

5 The agency shall be responsible to deploy appropriate tool to monitor the performance and submit system generated reports on the performance and adherence to the SLA. The user department shall also be able to pull the reports for verification.

6 The Tenderer holds the right to bring/deploy any external resources/agencies at any time for SLA review.

6.9 Resolution of Complaints

6.7.1 Any complaints (other than the SLA parameters) notified by the Authority to the Agency shall have to be replied to in written along with the suggested course of action to be taken in order to resolve the complaint by the Agency within 10 (ten) working days of the complaint being notified.

6.7.2 The suggested course of action by the Agency shall then be reviewed by the Authority and the final modifications (if any) shall have to be implemented in a manner and time frame suggested by the Authority.

6.10 Force Majeure

6.8.1 Force Majeure shall mean any event beyond the control of Authority or of the Agency, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected, and which could not have been prevented by the exercise of reasonable skill and care and good industry practices and shall include, without limitation, the following:

a. War, hostilities, invasion, acts of a foreign enemy and civil war.
b. Rebellion, revolution, insurrection, mutiny, conspiracy, riot, civil commotion, and terrorist acts.
c. Strike, sabotage, unlawful lockout, epidemics, quarantine, and plague.
d. Earthquake, fire, flood or cyclone, or other natural disaster
e. Any other event as decided by the Authority

6.8.2 As soon as reasonably practicable but not more than 48 (forty-eight) hours following the date of commencement of any event of Force Majeure, an Affected Party shall notify the other Party of the event of Force Majeure setting out, inter alia, the following in reasonable detail:

a. The date of commencement of the event of Force Majeure.
b. The nature and extent of the event of Force Majeure.
c. The estimated Force Majeure Period,
d. Reasonable proof of the nature of such delay or failure and its anticipated effect upon the time for performance and the nature of and the extent to which, the performance of any of its obligations under the Agreement is affected by the Force Majeure.
e. The measures which the Affected Party has taken or proposes to take to alleviate/mitigate the impact of the Force Majeure and to resume the performance of such of its obligations affected thereby.
f. Any other relevant information concerning the Force Majeure and/or the rights and obligations of the Parties under the Agreement.

SECTION - 7

3 FINANCIAL BID FORMAT

This table is just for information explaining how to fill price online, Bidder need to submit quote in following format online only, Don't submit it with technical document.

Table-1:
Financial Bid:

Sr #	Scope of Deliverables	Qty	Total Amount
1	Delivery of Project as per Scope of Work detailed in the RFP document for the period of 5 Years.	1	XXXX
		Total (in RS.)(with taxes)	XXXX

Terms and Conditions on Commercial/Financial Proposal

a. The bidder needs to quote the price inclusive of GST and all applicable taxes in the financial bid.

b. The Total amount quoted shall be evaluated for financial bid. The bidder has to factor all components and services as required to deliver the Project. Bidder has to provide any additional hardware and its accessories, software and licenses to complete propose solution without additional cost to GOG.

c. The selected agency shall have to submit the financial break-up with cost on each component considered to successfully deliver the solution with an O&M for 5 years.

d. The above quoted applicable rates shall be valid for 05 years and in case, if the tenderer is willing to procure additional licenses/resources, then the successful bidder will have to provide the same within the contract period.

e. TDS will be deducted as applicable.

SECTION – 8

8.1 ANNEXURES

8.1.1 Annexure 1 - Minimum Qualification of Manpower to be Deployed (Indicative List)

SN	Role	Qualification & Experience
1	Project Manager	BE/B.Tech/MBA in IT full time 15+ Years of Experience in ICT,
2	Remote Sensing	BE/B.Tech 10+ Years of Experience in ICT,
3	Forest Expert	Bsc./Msc. In Forest/Agriculture 5+ Years of Experience in Forest/Agriculture,
4	GIS/Remote Sensing Expert	Bsc./Msc. In GIS/Remote Sensing 5+ Years of Experience in GIS/Remote Sensing,
5	ICCC Expert	BE/B.Tech/MCA 5+ Years of Experience in ICT,
6	IT Support Expert	BE/B.Tech/MCA 3+ Years of Experience in ICT,

Note: The bidder shall be responsible to deploy required manpower for successful execution and operation of the project.

Additional Note:

- Bidder shall be responsible for maintaining data for 5 years and should size the hardware accordingly
- Warranty for all supplied devices in the RFP shall be 5 years from the FAT date as this is solution based RFP
- OEM onsite support is required for major/critical upgrades, migration, and any critical issues arising during the contract period.
- For the FAT and billing process during the contract period, the Auditor /Third Party Auditor of GIL may verify all RFP compliances and submit the recommendation report to the tenderer
- UPS batteries must be replaced after 3 years and immediately in case of a battery failure
- Customize report facility should be available as and when required during the contract period
- The bidder shall provide on premises 24×7 support
- SLA applicable for 24*7 of supplied components and man-power.

8.1.2 Annexure 2 – Bill of Material (Indicative List Only)

Sr. No.	Line Item	Qty.	UoM	Unit Cost (In	Total (In INR)
1	**Monitoring Software**				
1.1	Web Portal (AI/ML based Data Analytics solution)	1	Nos		
1.2	Mobile Application (AI/ML based Data Analytics solution)	1	Nos		
2	**SITC of Central ICCC**				
2.1	Video wall Solution - 55" LED screens (Video Wall (4x3 cubes, 55 inches cube) and Mounting Accessories)	1	Nos		
2.2	Video wall controller with wall management software	2	Nos		
2.3	Monitoring Workstation	12	Nos		
2.4	Networking and Cabling at Command and Control Centre	1000	Meter		
2.5	Biometric based Authentication	1	Nos.		
2.6	MFP A3 laser colour Printer	1	Nos.		
3	**Major components for Conference Room at ICCC**				
3.1	Interactive Video Screens 86"	1	Nos.		
3.2	Video conference solution with 250 concurrent users license	1	Nos.		
3.3	Workstation	1	Nos.		
3.4	Indoor Wi-Fi Access Points	1	Nos.		
3.5	Meeting and Conference Table (with necessary electrical and Network points)	1	Nos.		
4	**Major components for each Manager Cabin at ICCC**				
4.1	Video Screens 42"	1	Nos.		
4.2	Workstation	1	Nos.		
4.3	MFP Printer	1	Nos		
5	**SITC of IoTs and Integration with ICCC**				
5.1	Thermal Camera	60	Nos		
5.2	Mounting, Pole (8 mtr.), Foundation, Junction Box, UPS, Cabling, Solar Power, Battery, Electrical Connection from nearest point, switches and peripherals, Surge Protection and earthing, Hooter alarm, Beacon, VMS Licenses	60	Nos		
5.3	Video Management Software at Centre with required VA and VMS Licenses	1	Lump Sum		
5.4	Body Worn Camera	200	Nos.		
5.5	Docking Station for Body worn Camera	20	Nos.		
5.6	VMS for Body Worn Camera	1	As per requirement		
6	Minimum Data Centre Components (GPU Infrastructure) required for hosting web and mobile application	1	As per Proposed Sol.		
7	Any other required hardware, software , licenses to complete proposed solution as mentioned details in this RFP	1	As per Proposed Sol.		
8	**O&M Cost for Contract Period**				
8.1	Operation & Maintenance including AI/ML based Data Analytics services for 5 years (excluding manpower)	1	Nos		
8.2	SIM based connectivity for Body Worn Camera (As per Sizing)	1	Nos		
8.3	MPLS Connectivity for Thermal Camera.	1	Nos		
8.4	Internet Bandwidth Cost as per requirement at ICCC.	1	Nos		
9	Manpower Cost Mentioned in RFP	1	As per RFP		
Total Cost (Including GST)					

- The selected agency shall have to submit the financial break-up with cost on each component considered to successfully deliver the solution with an O&M for 5 years.

- The above quoted applicable rates shall be valid for 05 years and in case, if the tenderer is willing to procure additional licenses/resources, then the successful bidder will have to provide the same within the contract period.

8.2 Formats:

8.2.1 Form 1: Proposal Covering Letter

(To be on the Bidder's letterhead duly Signed by Authorized Signatory)

Tender Ref No:

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010

Ref: RFP for XXXXXXXXXXXXXX

Dear Sir,

We …… (Name of the bidder) hereby submit our proposal in response to notice inviting tender date …….. And tender document no. xxxxxxxxxx Dated: dd/mm/yyyy and confirm that:

All information provided in this proposal and in the attachments, is true and correct to the best of our knowledge and belief. We shall make available any additional information if required to verify the correctness of the above statement. Certified that the period of validity of bids is 180 days from the last date of submission of proposal, and We are quoting for all the items (including services) as per the price bid format Section-VII as mentioned in the RFP. We the Bidder are not under a declaration of Ineligibility for corrupt or fraudulent practices or blacklisted by any of the Government agencies.

We have an office in the state and relevant documents for the same are attached. We undertake that if the local presence is not there in the state, that we shall establish an office at Gandhinagar/ Ahmedabad, within 45 days from the date of the award of contract.

Gujarat Informatics Limited may contact the following person for further Information regarding this tender: -

Name & Designation:
Full address of office
Email ID & Contact No.
We are uploading our Response to the RFP (Eligibility, technical and financial bid documents) as per the instructions set out in this RFP.

Yours sincerely,

Authorized Signature (in Full and Initials) Name and Title of Signatory:
Name of Firm: Address:
Email Address: Telephone number & Fax:

8.2.2 Form 2: Format for General Information

S. No	Particulars	Details	Documentary evidence to be included
1.	Name of the Bidder	Name: (Mention the type of entity: Private limited I Partnership/	Incorporation Certificate
2.	Country of Registration		Incorporation Certificate
3.	Address of the corporate headquarters and its branch office(s), if any, in India		NA
4.	Date of incorporation and commencement of business	DD/MM/YYYY	
5.	List of current directors		NA
6.	Other key management personnel		Details to be submitted
7.	Brief description of the Company including details of its main lines of business.		Company Profile
8.	Details of the individual (s) who will serve as the point of contact/ communication within the Company:	Name: Designation: Address: Mobile Number: E-Mail Address:	NA
9.	PAN details (Company & Director)		Copy of the PAN card
10.	GST Registration No.		GST registration certificate
11.	ISO & CMMI Certification	Details	Certificates
12.	EPFO	Details	
13.	ESIC	Details	
14.	Balance Sheet/ Profit & Loss/ Audit Reports/ Income Tax Return Submission/ CA Certificate 2020-21, 2021-22, 2022-23	Details	CA certificate from Charted Accountant / Statuary Auditor
15.	Project (WorkOrder/ Agreement/ Certificate)	Details	Work order, Agreement, Completion certificate from the client.

Signature
Name: _____
Designation: _____
Company Seal Company _
Date: _____

8.2.3 Form 3: Format for Financial Summary of the Bidder

(Same should be furnished by the Charted Accountant / Statutory Auditor on their letter head)

Average Annual Turnover of the Bidder (from works related to providing Web, Mobile and Software Development)

S. No	Financial Year	Annual Turnover (INR)
1.	FY 2021 - 2022	
2.	FY 2022 – 2023	
3.	FY 2023 - 2024	
	[Average Annual Turnover]	[indicate sum of above divided by 3]

Note: Bidders are required to provide data for last three years ending 31st March 2023. Audited Balance Sheets are also required to be submitted for the same.

UDIN No:_____

Certificate from the Statutory Auditor

Note:

1. The Bidder shall submit audited annual reports (financial statements: balance sheets, profit and loss account, notes to accounts etc.) in support of the financial data duly certified by statutory auditor/s. In case, the company does not have a statutory auditor/s, it shall be certified by the chartered accountant that ordinarily audits the annual financials of the company.
2. Certificate(s) from the statutory auditors specifying the Turnover of the Bidder for FY 2021-22, FY 2022-23 and FY 2023-24. For the purpose of this RFP, net worth shall mean the sum of subscribed and paid-up equity share capital and reserves from which shall be deducted the sum of revaluation reserve, miscellaneous expenditure not written off and reserves not available for distribution to equity shareholders.

8.2.4 **Form 4: No Blacklisting**
(To be printed on INR 300/- Stamp Paper)

Date:

To,
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010

Sir,

In response to the Tender Ref. No. _____ dated _____for "Selection of the agency for providing Conception and Crafting of a Booking Website, alongside the Development of Various Web Modules, Coupled with the Design and Implementation of a Comprehensive Mobile Application.", as an Owner/Partner/Director of_____, I/We hereby declare that presently our Company/Firm_____is having unblemished record and is not declared ineligible for corrupt and fraudulent practices either indefinitely or for a particular period of time by any State/ Central Government/PSU.

We further declare that presently our Company/Firm_____is not blacklisted and not declared ineligible for reasons other than corrupt and fraudulent practices by any State/Central Government/PSU on the date of bid submission.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken,my/ our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

Yours sincerely,

Authorized Signature (in Full and Initials) Name and Title of Signatory:
Name of Firm:
Address:
Email Address: Telephone number & Fax:

8.2.5 Form 5: Not Terminated, Not Being Insolvent or In Receivership or Bankrupt

(To be printed on INR 300/- Stamp Paper)

Date:

To

The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010

Sir,

In response to the Tender Ref. No. _____ dated _____for "Selection of the agency for providing Conception and Crafting of a Booking Website, alongside the Development of Various Web Modules, Coupled with the Design and Implementation of a Comprehensive Mobile Application.", as an Owner/Partner/Director of_____, I/We hereby declare that presently our Company/Firm_____:

a. has not been terminated by any Government/Semi-Government or Public Authority or Public Institution in India or abroad, before the completion of respective Contract period for which it has executed the project or in process of execution of such project, on account of its poor performance, delay or abandonment of work by it.

b. is not insolvent, in receivership, bankrupt or being wound up, not have its affairs administered by a court or a judicial officer, not be declared defaulter by any financial institution, not have its business activities suspended and must not be the subject of legal proceedings for any of the foregoing reasons.

c. not has, and their directors and officers not have, been convicted of any criminal offence related to their professional conduct or the making of false statements or misrepresentations as to their qualifications to enter into a procurement contract within a period of three years preceding the commencement of the procurement process, or not have been otherwise disqualified pursuant to debarment proceedings.

If this declaration is found to be incorrect then without prejudice to any other action that may be taken, my/ our security may be forfeited in full and the tender if any to the extent accepted may be cancelled.

Yours sincerely,

Authorized Signature (in Full and Initials)
Name and Title of Signatory:
Name of Firm:
Address:
Email Address: Telephone number & Fax:

8.2.6 Form 6: Office in Gujarat.

Date:

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010

Sir,

I/We_____, hereby declare that we have our registered office in Gujarat at_____.

We have attached_____as a supporting to the proof of address.

Yours sincerely,

Authorized Signature (in Full and Initials)
Name and Title of Signatory:
Name of Firm:
Address:
Email Address:
Telephone number & Fax:

8.2.7 Form 7: Director and Partners not involved in any criminal offence.

Date:

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010.

Sir,

I/We_____, hereby declare that our directors and officers convicted of any criminal offence related to their professional conduct or the making of false statements or misrepresentations as to their qualifications to enter a procurement contract within a period of three years preceding the commencement of the procurement process, or not have been otherwise disqualified.

Yours sincerely,

Authorized Signature (in Full and Initials)
Name and Title of Signatory:
Name of Firm:
Address:
Email Address:
Telephone number & Fax.

8.2.8 Form 8: Format for Showcasing Experience

Date:

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010

A. Project Summary Sheet:

Sr.no	Name of the Project	Completion Date	Project Duration	Project Cost	Client Name & Contact number or Email Address
1.					
2.					

Note: Add rows as required

B. Project Citation

(To be submitted for each project as per the table above)

S. No	Aspect	Details
1	Name of the Project	
2	Name of Client	
3	Start Date and End Date	DD/MM/YYYY to DD/MM/YYYY
4	Project Duration	
5	Project Cost	
6	Current Stage	
7	Client Contact Number & Email Address	Yes/No
8	Documentary Evidence being submitted	Choose from ▪ Work order ▪ Letter of Invitation / Award ▪ Agreement ▪ Completion Certificate
9	Project Scope (In Brief)	<Project Scope highlighting all components as asked in this bid>

Note: *Each project profile must be duly supported by documentary evidence from the client side like Work Order, Agreement, and Completion Certificate for being considered for marking. Projects without evidence may be rejected. Bidders are advised to highlight relevant sections of the documentary evidence for quick reference of the Authority. Only eligible projects (as per terms & conditions provided in RFP) shall be considered for marking.*

Yours sincerely,

Authorized Signature (in Full and Initials)
Name and Title of Signatory:
Name of Firm:
Address:
Email Address: Telephone number & Fax.

8.2.9 Form 9: Format for Land Border on Bidder's Letterhead

Date:

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan, Sector – 10 A, Gandhinagar-382010

Sub : Undertaking as per Office Memorandum No.: F. No.6/18/2019-PPD dated 23.07.2020 published by Ministry of Finance, Dept. of Expenditure, Public Procurement division

Ref: Bid Number:

I have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India. I certify that we as a bidder and quoted product from following OEMs are not from such a country or, if from such a country, these quoted products OEM has been registered with competent authority. I hereby certify that these quoted product & its OEM fulfills all requirements in this regard and is eligible to be considered for procurement for Bid number _____

No	Item Category	Quoted Make & Model

In case I'm supplying material from a country which shares a land border with India, I will provide evidence for valid registration by the competent authority, otherwise GIL/End user Dept. reserves the right to take legal action on us.

Yours sincerely,

Authorized Signature (in Full and Initials)
Name and Title of Signatory:
Name of Firm:
Address:
Email Address:
Telephone number & Fax.

8.2.10 Form 10: Format for Land Border on OEM's Letterhead

Date:

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests & Head of the Forest Force (PCCF & HOFF)., A-wing, First Floor, Arnya bhavan, Sector – 10 A, Gandhinagar-382010

Sub : Undertaking as per Office Memorandum No.: F. No.6/18/2019-PPD dated 23.07.2020 published by Ministry of Finance, Dept. of Expenditure, Public Procurement division

Ref: Bid Number:

Dear Sir,

I have read the clause regarding restriction on procurement from a bidder of a country which shares a land border with India. I certify that our quoted product and our company are not from such a country, or if from such a country, our quoted product and our company have been registered with competent authority. I hereby certify that these quoted product and our company fulfills all requirements in this regard and is eligible to be considered for procurement for Bid number _____.

No	Item Category	Quoted Make & Model

In case I'm supplying material from a country which shares a land border with India, I will provide evidence for valid registration by the competent authority; otherwise GIL/End user Dept. reserves the right to take legal action on us.

Yours sincerely,

Authorized Signature (in Full and Initials)
Name and Title of Signatory:
Name of Firm:
Address:
Email Address:

Telephone number & Fax.

8.2.11 Form 11: Format for MAF on OEM's Letterhead

Date:

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010

Ref: Bid Number:
Subject: MAF Authorization.
Dear Sir,
We, M/s XXXXXX Manufacturing make do hereby authorize XXXXXX to submit a bid, and sign the contract with you against above mentioned tender
No:
Bid Number: XXXXX

We authorized the XXXX for the following modules/products:

No.	Item Description	Make	Model	UOM

We hereby confirm that the offered Product in the referenced RFP will be provided unconditionally with a back to back warranty, maintenance, support services and parts availability etc. for proposed product etc. available for the period of Three years from FAT through M/s. XXXX.

Sign and Stamp of Authorized person.

8.2.12 Form 12: Bank Guarantee format for Earnest Money Deposit

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010

Whereas ---------- (here in after called "the Bidder") has submitted its bid dated ---------- in response to the Tender no: xxxxxxxxxxxxxxxxxx for ___ _____ KNOW ALL MEN by these presents that WE ---------- having our registered office at ---------- (hereinafter called "the Bank") are bound unto the_____, Gujarat Informatics Limited in the sum of ---------- for which payment well and truly to be made to Gujarat Informatics Limited , the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this ----------day of ----------2024.

THE CONDITIONS of this obligation are:

The EMD may be forfeited, In case of a Bidder if:

1) The bidder withdraws its bid during the period of bid validity.

   a. The Bidder does not respond to requests for clarification of their Bid.

   b. The Bidder fails to co-operate in the Bid evaluation process.

   c. The bidder, fails to furnish Performance Bank Guarantee in time.

2) The bidder fails to Sign the contract in accordance with this RFP

3) The bidder is found to be involved in fraudulent and corrupt practices

We undertake to pay to the GIL up to the above amount upon receipt of its first written demand, without GIL having to substantiate its demand, provided that in its demand GIL will specify that the amount claimed by it is due to it owing to the occurrence of any of the above-mentioned conditions, specifying the occurred condition or conditions.

This guarantee will remain valid up to 9 months from the last date of bid submission. The Bank undertakes not to revoke this guarantee during its currency without previous consent of the GIL and further agrees that the guarantee herein contained shall continue to be enforceable till the GIL discharges this guarantee The Bank shall not be released of its obligations under these presents by any exercise by the GIL of its liability with reference to the matters aforesaid or any of them or by reason or any other acts of

omission or commission on the part of the GIL or any other indulgence shown by the GIL or by any other matter or things.

The Bank also agree that the GIL at its option shall be entitled to enforce this Guarantee against the Bank as a Principal Debtor, in the first instance without proceeding against the SELLER and not withstanding any security or other guarantee that the TENDERER may have in relation to the SELLER's liabilities.

Dated at_____on this_____day of_____2025.

Signed and delivered by

_____

For & on Behalf of

Name of the Bank & Branch &

Its official Address with seal

Approved Bank: All Nationalized Bank including the public sector bank or Private Sector Banks or Commercial Banks or Co-Operative & Rural Banks (operating in India having branch at Ahmedabad/ Gandhinagar) as per the G.R. no. FD/MSM/e-file/4/2024/2859/DMO dated 1st May 2025 issued by Finance Department or further instruction issued by Finance department time to time.

8.2.13 Form 13: Performance Bank Guarantee

(To be stamped in accordance with Stamp Act)

Ref: Bank Guarantee
No.

Date:

To
The Principal Chief Conservator of Forest,
Office of the Principal Chief Conservator of Forest and Forests
& Head of the Forest Force (PCCF & HOFF).,
A-wing, First Floor, Arnya bhavan,
Sector – 10 A, Gandhinagar-382010

Dear Sir,

WHEREAS..... (Name of Bidder) hereinafter called “the Bidder" has undertaken, in pursuance of Agreement dated, (hereinafter referred to as "the Agreement for “RFP for XXXXXXXXXX” ***(Tender No. xxxxxxxxxxxxxxxx Dated: xx.xx.xxxx)*** for the Department of Science & Technology, Government of Gujarat.

AND WHEREAS it has been stipulated in the said Agreement that the Bidder shall furnish a Bank Guarantee ("the Guarantee") from a scheduled bank for the sum specified therein as security for implementing PROJECT.

1. WHEREAS we_____("the Bank", which expression shall be deemed to include it successors and permitted as Signs) have agreed to give the Gujarat Informatics Limited ("GIL") the Guarantee:

THEREFORE, the Bank hereby agrees and affirms as follows:

The Bank hereby irrevocably and unconditionally guarantees the payment of all sums due and payable by the Bidder to GIL under the terms of their Agreement dated _____. Provided, however, that the maximum liability of the Bank towards GIL under this Guarantee shall not, under any circumstances, exceed _____in aggregate.

2. In pursuance of this Guarantee, the Bank shall, immediately upon the receipt of a written notice from GIL in that behalf and without delay/demur or set off, pay to GIL any and all sums demanded by GIL under the said demand notice, subject to the maximum limits specified in Clause 1 above. A notice from GIL to the Bank shall be sent by Registered Post (Acknowledgement Due) at the following address:

_____

_____

_____

Attention Mr._____.

3. This Guarantee shall come into effect immediately upon execution and shall remain in force for a period of months from the date of its execution. The Bank shall extend the Guarantee for a further period which may be mutually decided by the bidder and GIL.

The liability of the Bank under the terms of this Guarantee shall not, in any manner whatsoever, be modified, discharged, or otherwise affected by:

- Any change or amendment to the terms and conditions of the Contract or the execution of any further Agreements.

- Any breach or non-compliance by the Bidder with any of the terms and conditions of any Agreements/credit arrangement, present or Future, between Bidder and the Bank.

4. The BANK also agrees that GIL at its option shall be entitled to enforce this Guarantee against the Bank as a Principal Debtor, in the first instance without proceeding against the BIDDER and not withstanding any security or other guarantee that GIL may have in relation to the Bidder's liabilities.

5. The BANK shall not be released of its obligations under these presents by reason of any act of omission or commission on the part of GIL or any other indulgence shown by GIL or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the BANK.

6. This Guarantee shall be governed by the laws of India and the courts of Gandhinagar shall have jurisdiction in the adjudication of any dispute which may arise hereunder.

Dated this ……. Day of ……..,2025

Witness

(Signature)

(Name)

(Official Address)

(Signature)

Bank Rubber Stamp

(Name)

Designation with Bank Stamp

Plus, Attorney as per Power of

Attorney No.

Dated:

Approved Bank: All Nationalized Bank including the public sector bank or Private Sector Banks or Commercial Banks or Co-Operative & Rural Banks (operating in India having branch at Ahmedabad/ Gandhinagar) as per the G.R. no. FD/MSM/e-file/4/2024/2859/DMO dated 1st May 2025 issued by Finance Department or further instruction issued by Finance department time to time.

8.2.14 Form 14: Self Declaration

(TO BE SUBMITTED PHYSICALLY ALONG WITH EMD)

AFFIDAVIT

(To be submitted IN ORIGINAL on Non-Judicial Stamp Paper of Rs 300/- duly attested by First Class Magistrate/ Notary public)

I/We, _____, age_____ years residing at _____ in capacity of _____M/s. _____ _____hereby solemnly affirm that

All General Instructions, General Terms and Conditions, as well as Special Terms & Conditions laid down on all the pages of the Tender Form, have been read carefully and understood properly by me which are completely acceptable to me and I agree to abide by the same.

I We have submitted following Certificates I Documents for T.E. as required as per General Terms & Conditions as well as Special Terms & Conditions of the tender

Sr. No.	Name of the Document
1	
2	

All the Certificates I Permissions I Documents I Permits I Affidavits are valid and current as on date and have not been withdrawn I cancelled by the issuing authority.

It is clearly and distinctly understood by me that the tender is liable to be rejected if on scrutiny at any time, any of the required Certificates I Permissions I Documents I Permits I Affidavits is I are found to be invalid I wrong I incorrect I misleading I fabricated I expired or having any defect.

I / We further undertake to produce on demand the original Certificate I Permission I Documents I / I Permits for verification at any stage during the processing of the tender as well as at any time asked to produce.

I We also understand that failure to produce the documents in "Prescribed Performa" (wherever applicable) as well as failure to give requisite information in the prescribed Performa may result into rejection of the tender.

My / Our firm has not been banned I debarred I blacklisted at least for three years (excluding the current financial year) by any Government Department I State Government I Government of India I Board I Corporation I Government Financial Institution in context to purchase procedure through tender.

I / We confirm that I I We have meticulously filled in, checked and verified the enclosed documents I certificates I permissions I permits I affidavits I information etc. from every aspect and the same are enclosed in order (i.e., in chronology) in which they are supposed to be enclosed. Page numbers are given on each submitted document. Important information in each document is "highlighted" with the help of "marker pen" as required.

The above certificates/ documents are enclosed separately and not on the Proforma printed from tender document.

I / We say and submit that the Permanent Account Number (PAN) given by the Income Tax Department is_____, which is issued on the name of_____[Kindly mention here either name of the Proprietor (in case of Proprietor Firm) or name of the tendering firn;1, whichever is applicable].

I / We understand that giving wrong information on oath amounts to forgery and perjury, and I/We am/are aware of the consequences thereof in case any information provided by us are found to be false or incorrect, you have right to reject our bid at any stage including forfeiture of our EMD/PBG/cancel the award of contract. In this event, this office reserves the right to take legal action on me/us.

I / We have physically signed &stamped all the above documents along with copy of tender documents (page no. ---- to --).

I / We hereby confirm that all our quoted items meet or exceed the requirement and are absolutely compliment with specification mentioned in the bid document.

My / Our Company has not filed any Writ Petition, Court matter and there is no court matter filed by State Government and its Board Corporation, is pending against our company.

I / We hereby commit that we have paid all outstanding amounts of dues/ taxes/ cess/ charges/ fees with interest and penalty.

In case of breach of any tender terms and conditions or deviation from bid specification other than already specified as mentioned above, the decision of Tender Committee for disqualification will be accepted by us.

Whatever stated above is true and correct to the best of my knowledge and belief.

Date: Stamp & Sign of the Tenderer

Place: (Signature and seal of the Notary)

8.2.15 Form 15: Format for Power of Attorney

(To be provided in original on stamp paper of value required under law duly Signed by 'bidder'**)**

Dated:

POWER OF ATTORNEY

To Whomsoever It May Concern

Know all men by these presents, we_____(name and registered office address of the Bidder) do hereby constitute, appoint and authorize Mr./ Ms./ Mrs._____(Name of the Person(s)), domiciled at_____(Address), acting as _____(Designation and the name of the firm), as Authorized Signatory and whose Signature is attested below, as our attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our Proposal for award of Contract "RFP for XXXXXXXXXX", vide (Tender Document) Document No._____ _____dated _____, issued by Gujarat Informatics Limited, including Signing and submission of all documents and providing information and responses to clarifications / enquiries etc. as may be required by Gujarat Informatics Limited or any governmental authority, representing us in all matters before Gujarat informatics Limited, and generally dealing with GIL in all matters in connection with our Proposal for the said Project. We hereby agree to ratify all acts, deeds and things lawfully done by our said attorney pursuant to this Power of Attorney and that all acts, deeds, and things done by our aforesaid attorney shall and shall always be deemed to have been done by us.

For ----------

(Signature)

(Name, Title and Address)

Accept (Attested Signature of Mr./Ms./Mrs._____

(Name, Title and Address of the Attorney)

Note: To be executed by the Bidder - The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required the same should be under common seal affixed in accordance with the required procedure. - Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a resolution / power of attorney in favour of the Person executing this Power of Attorney for the delegation of power hereunder on behalf of the executants(s).

*****End*****