ODISHA STATE ROAD TRANSPORT CORPORATION, BHUBANESWAR

No. 123/OSRTC/ MIS- 924/20 **Date: 04/05/2023.**

Request For Proposal (RFP)

The Chairman-Cum-Managing Director, Odisha State Road Transport Corporation (OSRTC), Bhubaneswar has invited a Request for Proposal (RFP) on the Selection of a System Integrator (SI) for Integrated Transport Management System (ITMS) for the OSRTC through the transparent bidding process.

The interested firms/ agencies should submit their proposals from Dt. 06.05.2023 to Dt. 08.06.2023 up to 3:00 PM and the same will be opened on Dt. 08.06.2023 at 4:00 PM at OSRTC conference hall.

For any doubt, agencies/ firms may contact the undersigned to address the issue during office hours.

The details of the terms & conditions are available on the web site www.osrtc.in.

The Authority reserves the right to accept or reject any or all proposals without assigning any reason thereof.

By order of the Chairman-cum-Managing Director,

04.05.23

General Manager(A),
OSRTC, Bhubaneswar

Odisha State Road Transport Corporation

Request for Proposal (RFP)

Selection of System Integrator for Integrated Transport Management System (ITMS)

Volume-I: Instruction to Bidders

[RFP No. 123 Date: 04/05/2023]

Issued By

Odisha State Road Transport Corporation (OSRTC)
Paribahan Bhavan, Sachivalaya Marg, Unit-II Bhubaneswar-751001, Odisha

Disclaimer

The information contained in this Request for Proposal document (the "RFP") or subsequently provided to Bidder(s), whether verbally or in documentary or any other form, by or on behalf of Odisha State Road Transport Corporation (OSRTC) or any of its employees or advisors, are provided to Bidder(s) on the terms and conditions set out in this document and such other terms and conditions subject to which such information is provided.

This document is not an agreement and is neither an offer nor invitation by OSRTC to the prospective Bidder or any other person. The purpose of this document is to provide interested parties with information that may be useful to them in the formulation of their bids for qualification pursuant to this RFP. This tender includes statements, which reflect various assumptions and assessments arrived at by OSRTC in relation to the Project. 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 OSRTC, its employees or advisors to consider the investment objectives, financial situation and particular needs of each party who reads or uses this document. The assumptions, assessments, statements, and information contained in this document may not be complete, accurate, adequate, or correct. Each Bidder should, therefore, conduct its own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments, statements, and information contained in this document and obtain independent advice from appropriate sources.

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

OSRTC, its employees and advisors make no representation or warranty and shall have no liability to any person, including any Bidder or Bidders, 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 document or otherwise, including the accuracy, adequacy, correctness, completeness or reliability and any assessment, assumption, statement or information contained therein or deemed to form part of this document or arising in any way with prequalification of Bidder for participation in the Bidding Process. OSRTC also accepts no liability of any nature whether resulting from negligence or otherwise caused arising from reliance of any Bidder upon the statements contained in this document. OSRTC may, in its absolute discretion but without being under any obligation to do so, update, amend or supplement the information, assessment or assumptions contained in this document.

The issue of this document does not imply that OSRTC is bound to select the prequalified Bidder at RFP stage to appoint the Successful Bidder (Agency), for the Project and OSRTC reserves the right to reject all or any of the Bids or Tenders without assigning any reasons whatsoever.

The Bidder shall bear all its costs associated with or relating to the preparation and submission of its bid including but not limited to preparation, copying, postage, delivery fees, expenses associated with any demonstrations or presentations which may be required by OSRTC, or any other costs incurred in connection with or relating to its Bid. All such costs and expenses will remain with the Bidder and OSRTC shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder in preparation or submission of the bid, regardless of the conduct or outcome of the Bidding Process.

Contents

1. Invitation for Proposal

Odisha State Road Transport Corporation (OSRTC) hereby invites bidders for Selection of System Integrator for Integrated Transport Management System (ITMS) for **implementation and three years (extendable up to additional 2 years) of operation and maintenance.** Bidder / Agencies are advised to study this document carefully before submitting their proposals in response to the RFP Notice. Submission of a proposal in response to this notice shall be deemed to have been done after careful study and examination of this document with full understanding of its terms, conditions, and implications.

The complete bidding document has been published on https://osrtc.in for the purpose of Downloading. The downloaded bidding document shall be considered valid for participation in the electronic bidding process subject to the submission of required tender/ bidding document fee and Earnest Bid Deposit (EMD). For any type of clarifications, bidder can contact +91-8763670095 or +91-8420167711, Email: cmdosrtc@gmail.com

I. A three-stage selection procedure shall be adopted as stipulated in this RFP.

II. Bidder(s) (authorized signatory) shall submit their offer for preliminary qualification, technical qualification, and financial proposal. Tender processing fees and Earnest Money Deposit (EMD) should be paid as per instructions provided in the bid document.

III. Bidder(s) are requested to submit the complete bid proposal, Tender fee and EMD, well advance in time to avoid any other unforeseen problems.

2. Schedule Bidding Process

#	Particulars	Details
1	Publication of RFP Notice	06 / 05 / 2023
2	Uploading of RFP document in OSRTC website	06 / 05 / 2023
3	Last date & time for Submission of Queries / Clarification	15 / 05 / 2023
4	Response to Queries / Clarification	20 / 05 / 2023
5	Last date for Bid Submission	08 / 06 / 2023
6	Place of submission of proposals:	General Manager (Admin) Odisha State Road Transport Corporation Paribahan Bhavan, Sachivalaya Marg, Unit-II, Bhubaneswar-751001, Odisha
7	Date and time for opening of bids	08 / 06 / 2023
8	Date and time for opening of financial bids	**-To be intimated-**

3. Introduction

3.1 Background:

OSRTC outlines the overall requirements for establishing efficient and safe public bus transportation services in the State of Odisha. OSRTC (the **"Tender Issuing Authority"** or **"TIA"**) is engaged in bus transportation operation in 314 routes with an existing fleet size of 638 buses (scalable up to 2000 buses) and as part of this endeavour, the TIA has decided to engage **System Integrator for Integrated Transport Management System (ITMS),** and has, therefore, decided to carry out the bidding process for selection of entities to whom the Project may be awarded.

I. The Project requires providing services for the **TIA**. The service area shall be amended as per notifications pertaining to the expansion of OSRTC operations as and when applicable.

II. The TIA intends to **select** Bidder(s) for awarding the Project through an open competitive bidding process in accordance with the procedure set out herein.

System Integrator for Integrated Transport Management System (ITMS) shall provide Vehicle Tracking System, Real Time Passenger Information System, Command and Control Center. Core technologies include Geographical Positioning System (GPS), Electronic Display Systems and Information & Communication Technologies. The implementation ITMS shall provide benefits in terms of reduced waiting time and uncertainty, increased accessibility of the system and real time information, increased safety of users, reduced fuel consumption and emissions, reduced operational costs, improved efficiency, and finally improved economic productivity. System integrator shall be responsible for integration of buses on lease and rental basis.

3.2 Brief Description of Bidding Process:

The TIA has adopted a two Stage Bidding Process (collectively referred to as the "Bidding Process") for selection of the Bidder for award of the Project. The selection process involves 3 envelope selection procedure, Pre-qualification of interested Bidders, Technical Qualification in accordance with the provisions of this RFP and Financial Bid. The TIA shall only open the financial bids of the Qualified Bidder.

I. The Applicant shall pay to the TIA a non-refundable sum of INR 10,000/- (Rupees Ten Thousand only) + GST (18%), as 'Tender Processing Fee'.

II. The details of the Bid submission are mentioned in this RFP.

III. The validity of Bid shall be as specified in this RFP.

IV. In terms of the RFP, a Bidder will be required to deposit, along with the Bid, Tender Processing Fee as specified in this RFP & Earnest Money Deposit (EMD) in accordance with this RFP.

3.3 Pre-Bid Conference:

- Bidder requiring any clarification on the RFP may send in their queries to cmdosrtc@gmail.com on or before the date mentioned in the Schedule of Bidding Process specified as per the format provided in Annexure II: Request for Clarification. Bidder shall be required to submit the queries in editable format preferably .doc and .xls both. OSRTC shall endeavor to respond to the queries within the period specified therein. All clarifications shall be published online on the website www.osrtc.in
- OSRTC shall endeavor to respond to the questions raised or clarifications sought by the Bidder. However, OSRTC reserves the right not to respond to any question or provide any clarification,

in its sole discretion, and nothing should be taken or read as compelling or requiring OSRTC to respond to any question or to provide any clarification.

- OSRTC may also on its own motion, if deemed necessary, issue interpretations and clarifications to all Bidder. All clarifications and interpretations issued by OSRTC shall be deemed to be part of the Bidding Documents. Verbal clarifications and information given by OSRTC, or its employees orrepresentatives shall not in any way or manner be binding on OSRTC.
- In case of any clarification/ queries, the person to be contacted is as under:

The General Manager (Admin.)

Odisha State Road Transport Corporation,
Paribahan Bhavan, Sachivalaya Marg, Unit-II,
Bhubaneswar-751001, Odisha

4. Instructions to Bidder

4.1 General Terms of Bidding:

- A Bidder is eligible to submit only one Bid for the Project as per the formats given in Annexures.
- Bid documents are being provided only as preliminary reference documents by way of assistance to the Bidder who are expected to carry out their own surveys, investigations, and other detailed examination before submitting their Bids. Nothing contained in the Bid documents shall be binding on the TIA nor confer any right on the Bidder, and the TIA shall have no liability whatsoever in relation to or arising out of any or all contents of the Bid documents.
- Notwithstanding anything to the contrary contained in Bid documents, the detailed terms specified in the Contract Agreement shall have overriding effect, provided, however, that any conditions or obligations imposed on the Bidder hereunder shall continue to have effect in addition to its obligations under the Contract Agreement.
- The Bidder shall deposit Earnest Money Deposit (EMD) in accordance with the provisions.
- The Bidder should submit a Power of Attorney as per the format at Annexure V: Power of Attorney for signing of Bid, authorizing the signatory of the Bid.
- The Bidding Documents including this RFP and all attached documents are and shall remain the property of TIA and are transmitted to the Bidder solely for the purpose of preparation and the submission of a Bid in accordance herewith. Bidders are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. The TIA will not return any Bid, or any information provided along therewith.
- A Bidder shall not have a conflict of interest *(the "Conflict of Interest")* that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified. In the event of disqualification, the TIA shall be entitled to forfeit and appropriate the EMD or Performance Bank Guarantee, as the case may be, as mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the TIA and not by way of penalty for, inter alia, the time, cost and effort of the TIA, including consideration of such Bidder's proposal (the "Damages"), without prejudice to any other right or remedy that may be available to the TIA under the Bidding Documents and/ or the Contract Agreement or otherwise. Without limiting the generality of the above, a Bidder shall be deemed to have a Conflict of Interest affecting the Bidding Process, if:
    - The Bidder, or Associate (or any constituent thereof) and any other Bidder, or any Associate thereof (or any constituent thereof) have common controlling shareholders or other ownership interest; provided that this disqualification shall not apply in cases where the direct or indirect shareholding of a Bidder, or an Associate thereof (or any shareholder thereof having a shareholding of more than 5% (five per cent) of the paid up and subscribed share capital of such Bidder or Associate, as the case may be) in the other Bidder or Associate, is less than 5% (five per cent) of the subscribed and paid up equity share capital thereof; provided further that this disqualification shall not apply to any ownership by a bank, insurance company, pension fund or a public financial institution referred to in sub-section (72) of section 2 of the Companies Act, 2013.
    - For the purposes of indirect shareholding held through one or more intermediate persons shall be computed as follows: (a) where any intermediary is controlled by a person through management control or otherwise, the entire shareholding held by such controlled intermediary in any other person (the "Subject Person") shall be taken into account for computing the shareholding of such controlling person in the Subject Person; and (b) subject

always to sub-clause above, where a person does not exercise control over an intermediary, which has shareholding in the Subject Person, the computation of indirect shareholding of such person in the Subject Person shall be undertaken on a proportionate basis; provided, however, that no such shareholding shall be reckoned under this sub-clause if the shareholding of such person in the intermediary is less than 26% of the subscribed and paid up equity shareholding of such intermediary; or a constituent of such Bidder is also a constituent of another Bidder.

- Such Bidder or any Associate thereof receives or has received any direct or indirect subsidy, grant, concessional Loan or subordinated debt from any other Bidder or Associate, or has provided any such subsidy, grant, concessional Loan or subordinated debt to any other Bidder or any Associate thereof; or
- Such Bidder has the same legal representative for purposes of this Bid as any other Bidder; or
- Such Bidder, or any Associate thereof, has a relationship with another Bidder, or any Associate thereof, directly or through common third party/ parties, that puts either or both in a position to have access to each other's information about, or to influence the Bid of either or each other; or
- Such Bidder or any Associate thereof has participated as a consultant to the Authority in the preparation of any documents, design, or technical specifications of the Project.
- Explanation: Associate means, in relation to the Bidder a person who controls, is controlled by, or is under the common control with such Bidder (the "Associate"). As used in this definition, the expression "control" means, with respect to a person which is a company or corporation, the ownership, directly or indirectly, of more than 50% (fifty per cent) of the voting shares of such person, and with respect to a person which is not a company or corporation, the power to direct the management and policies of such person by operation of law.
- The TIA, its employee and advisors would treat the bids and supporting information submitted by the bidder in a reciprocating confidentiality and would use it for the purpose of this or litigations, the TIA would do so, with an information to the Bidder and any expenses related to the same would be charged to the bidder.
- This RFP is not transferable. Any award of Project pursuant to this RFP shall be subject to the terms of Bidding Documents.

4.2 Acknowledgement by Bidder:

It shall be deemed that by submitting a Bid, the Bidder has:

- Made a complete and careful examination of the Bidding Documents.
- Received all relevant information requested from the TIA.
- Accepted the risk of inadequacy, error or mistake in the information provided in the Bidding Documents or furnished by or on behalf of the TIA relating to any of the matters referred to in above.
- Satisfied itself about all matters, things and information including matters referred to in this clause hereinabove necessary and required for submitting an informed Bid, execution of the Project in accordance with the Bidding Documents and performance of all of its obligations there under.
- Acknowledged and agreed that inadequacy, lack of completeness or incorrectness of information provided in the Bidding Documents or ignorance of any of the Bidder referred to in this clause

hereinabove shall not be a basis for any claim for compensation, damages, extension of time for performance of its obligations, loss of profits etc. from the TIA, or a ground for termination of the Contract Agreement by the Agency.

- Acknowledged that it does not have a Conflict of Interest; and
- Agreed to be bound by the undertakings provided by it under and in terms hereof.

4.3 Cost of Bidding:

- Bidder are invited to examine all information relevant to the Project in greater detail and to carry out, at their cost, such studies as may be required for submitting their respective Bids for award of the Project including implementation of the Project.
- The Bidder shall be responsible for all the costs associated with the preparation of their Bids and their participation in the Bidding Process. The TIA will not be responsible or in any way liable for such costs, regardless of the conduct or outcome of the Bidding Process.

4.4 Verification and Disqualification:

- TIA shall not be liable for any omission, mistake or error in proposals submitted by the bidder. The TIA reserves the right to verify all statements, information and documents submitted by the Bidder in response to the RFP or the Bidding Documents and the Bidder shall, when so required by the TIA, make available all such information, evidence and documents as may be necessary for such verification. Any such verification or lack of such verification, the TIA shall not relieve the Bidder of its obligations or liabilities hereunder nor will it affect any rights of the TIA thereunder. TIA reserves the right to decide to ask for any clarification and decide to consider the same.
- The TIA reserves the right to reject any Bid and forefeet the EMD if:
    - At any time, a material misrepresentation is made or uncovered, or
    - The Bidder does not provide, within the time specified by the TIA, the supplemental information sought by the TIA for evaluation of the Bid.
    - Such misrepresentation/ improper response shall lead to the disqualification of the Bidder. If such disqualification/ rejection occurs after the Bids have been opened and the lowest Bidder gets disqualified/ rejected, then the TIA reserves the right to:
    - Invite the remaining Bidder to submit their Bids in accordance with the conditions of this RFP.
    - Take any such measure as may be deemed fit in the sole discretion of the TIA, including annulment of the Bidding Process In case it is found during the evaluation or at any time before signing of the Agreement or after its execution and during the period of subsistence thereof, that one or more of the pre- qualification conditions have not been met by the Bidder, or the Bidder has made material misrepresentation or has given any materially incorrect or false information, the Bidder shall be disqualified forthwith if not yet appointed as the Agency either by issue of the Letter of Award (LoA) or entering into of the Agreement, and if the Successful Bidder has already been issued the LoA or has entered into the Agreement, as the case may be, the same shall, notwithstanding anything to the contrary contained therein or in this RFP, be liable to be terminated, by a communication in writing by the TIA, without the TIA being liable in any manner whatsoever. In such an event, the TIA shall be entitled to forfeit and appropriate the EMD or Performance Bank Guarantee as Damages, without prejudice to any other right or remedy that may be available to the TIA under the Bidding Documents and/ or the Agreement, or otherwise.

4.5 Amendment of RFP:

- At any time prior to the deadline for submission of Bids, the TIA may, for any reason, whether at its own initiative or in response to clarifications requested by a Bidder, modify the RFP by the issuance of Addendum or a Corrigendum. An addendum or a corrigendum thus issued will be a part of the RFP and shall be published online on the website www.osrtc.in. TIA will assume no responsibility for receipt of the Addendum or Corrigendum.
- To accord the Bidder a reasonable time for taking an Addendum into account, or for any other reason, the TIA may, at its own discretion, extend the Bid Due Date.

4.6 Proprietary data:

All documents and other information supplied by TIA or submitted by a Bidder to TIA shall remain or become the property of TIA. Bidder(s) are to treat all information as strictly confidential and shall not use it for any purpose other than for preparation and submission of their Bid. TIA shall not return any Bid, or any information provided therewith.

4.7 Language, Format and Signing of Bid:

- The Bid, as well as all correspondence and documents relating to the Bid, exchanged between TIA and the Bidder shall be written in English Language. Any printed literature furnished by the Bidder written in another language must be accompanied by a translation in the English Language duly authenticated by the Bidder, in which case, for purposes of interpretation of the Bid, the translation shall govern.
- The Bidder shall provide all the information sought under this RFP. The TIA will evaluate only those Bids that are complete in all respects. The Pre- qualification and Technical proposal shall be submitted as per the check list provided in Annexures.
- The Financial bid is to be submitted as per the format given in Annexure XXII: Format for Financial Proposal, 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 discrepancy in numeric and alphabetical manner, the lower of both shall be considered.
- The Bid shall be typed or written in indelible ink and signed by the authorized signatory of the Bidder having a Power of Attorney as per format Annexure V: Power of Attorney for signing of Bid, as applicable and duly authenticated by affixing a Common Seal who shall also initial each page in blue ink. All the alterations, omissions, additions, or any other amendments made to the Bid shall be initialed by the person(s) signing the Bid.
- The bidder shall furnish the required information in their Bid in the enclosed formats only as per the Annexures to the RFP. Any deviations with respect to this may make their Bid liable for rejection.

  - **As part of Pre-Qualification, the following shall form part of the proposal (Envelope I):**

    i. Tender Document Fee in the shape of Demand Draft from any Scheduled Commercial or Nationalized Bank

    ii. EMD* fee in the shape of Demand Draft from any Scheduled Commercial or Nationalized Bank

    iii. Annexure I: Covering letter.

    iv. Annexure III: Pre-Qualification Checklist and Supporting documents.

v. Annexure IV: Details of Bidder

vi. Annexure V: Power of Attorney

vii. Annexure VI: Self-Declaration for Non-Blacklisting

viii. Annexure VII: Declaration for Non-Performance

- **As part of Technical-Qualification, the following shall form part of the proposal (Envelope II):**

i. Annexure VIII: Technical Capacity of the Bidder

ii. Annexure IX: Technical Evaluation Checklist

iii. Annexure X: Financial Capacity of the Bidder

iv. Annexure XI: Relevant Experience

v. Annexure XII: Manufacturers Authorization Form (For Hardware Equipment)

vi. Annexure XIII: Approach and Methodology

vii. Annexure XIV: Solution Purposed

viii. Annexure XV: List of Key Personnel

ix. Annexure XVI: Curriculum Vitae of Key Personnel

x. Annexure XVII: Staffing Schedule for Operations Phase

xi. Annexure XVIII: Work Schedule

xii. Annexure XIX: Undertaking – Arrangement with OEMs for Technical Support

xiii. Annexure XX: Compliance to Functional Requirements

- **The Financial Proposal shall be submitted in formats provided in the following annexures (Envelope III):**

i. Annexure XXII: Format for Financial Proposal

- The Bidder shall submit Pre-Qualification, Technical Qualification proposal and Financial Bid in the format specified in Annexures and in accordance with this RFP. The Bidder shall submit the bid by Speed Post/ Courier service or submit the proposal with The General Manager (Admin), Odisha State Road Transport Corporation, Paribahan Bhavan, Sachivalaya Marg, Unit-II, Bhubaneswar751001, Odisha. **The Bidder shall submit the hard copy and soft copy in Pen drive.**
- The cover Envelope IV shall clearly bear the following identification: **" Selection of System Integrator for Integrated Transport Management System (ITMS),"** and shall clearly indicate the tender notice number, name, and address of the Bidder. In addition, the Bid Due Date should be indicated on the right-hand corner of the envelope. The envelope shall be addressed to -

  The General Manager (Admin),
  Odisha State Road Transport Corporation
  Paribahan Bhavan, Sachivalaya Marg, Unit-II
  Bhubaneswar-751001, Odisha

- The Bidder shall submit Pre-Qualification, Technical Qualification proposal and Financial Bid in the format specified in Annexures and in accordance with this RFP. The Bidder shall submit the hard copy of Pre-Qualification, Technical Qualification proposal and Financial Bid, Tender

Processing fees and EMD in a sealed envelope in accordance with this RFP.

- If the envelope is not sealed and marked as instructed above, the TIA assumes no responsibility for the misplacement or premature opening of the contents of the Bid and consequent losses, if any, suffered by the Bidder.
- Further, Bidders are required to submit all details only as per RFP document. In the event of any of the instructions mentioned herein not adhered to, the TIA reserves the right to reject the Bid.
- Bids submitted by fax, telex, telegram or e-mail shall not be entertained and shall be rejected.
- Bids should be submitted before 3:00 PM on the Due Date as specified in the RFP. The cover **Envelope IV** containing the following documents shall be submitted at the address provided in the manner and form as detailed in this RFP within the due date and time as specified in the RFP.
    i. Tender processing fee as per RFP & EMD along with Pre-Qualification documents (**Envelope I**), signed copy of the RFP,
    ii. Technical Qualification proposal (**Envelope II**) and
    iii. Financial Proposal (**Envelope III**)
- OSRTC may, in its sole discretion, extend the Bid Due Date by issuing an Addendum.
- Bids received after the specified time on the Bid Due Date shall not be eligible for consideration and shall be summarily rejected.
- Modifications/ Substitution/ Withdrawal of Bids:
    - The Bidder shall modify, substitute, or withdraw the bid prior to the Bid Due Date. No Bid shall be modified, substituted, or withdrawn by the Bidder on or after the Bid Due Date.
    - Any alteration/ modification in the Bid or additional information supplied after the Bid Due Date, unless the same has been expressly sought for by OSRTC, shall be disregarded.
- OSRTC shall not be liable to pay any interest on the Earnest Money Deposit (EMD) so made and the same shall be interest free. EMD shall be non-transferable. Any Bid not accompanied by the Earnest Money Deposit (EMD) & Tender processing fee shall be rejected by OSRTC as non- responsive.
- The Earnest Money Deposit (EMD) of unsuccessful Bidder will be returned by OSRTC, without any interest, within 60 days from the date of opening of the financial bid or when the Bidding process is cancelled or closed by OSRTC. The Bidder may by specific instructions in writing to OSRTC give the details for name and address of the person in whose favor the said demand draft shall be drawn by OSRTC for refund, failing which it shall be drawn in the name of the Bidder.
- The successful Bidder's Earnest Money Deposit (EMD) will be returned, without any interest, upon such Successful Bidder signing the Agreement and furnishing the Performance Bank Guarantee in accordance with the provisions thereof.
- OSRTC shall be entitled to forfeit and appropriate the Earnest Money Deposit (EMD) as mutually agreed genuine pre-estimated compensation/ Damages to OSRTC in any of the events specified in. The Bidder, by submitting its Bid pursuant to this RFP, shall be deemed to have acknowledged and confirmed that OSRTC will not suffer loss and damage on account of withdrawal of its Bid or for any other default by the Bidder during the Bid validity period. No relaxation of any kind on Earnest Money Deposit (EMD) shall be given to any Bidder.

4.8 Validity of Bid:

- Bids shall remain valid for a period of 180 (one hundred and eighty) days from the date of opening of the Financial Bid.
- In exceptional circumstances, prior to expiry of the original bid validity period, OSRTC may request the bidder to extend the period of validity for a specified additional period. The request and the responses thereto shall be made in writing. A bidder may refuse the request without forfeiting his EMD. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his EMD for the period of the extension, and in compliance all respects.

4.9 Confidentiality:

- Information relating to the examination, clarification, evaluation, and recommendation for the Bidder shall not be disclosed to any person who is not officially concerned with the process or is not a retained professional advisor advising the TIA in relation to or matters arising out of or concerning the Bidding Process. The TIA will treat all information submitted as part of the Bid, in confidence and will require all those who have access to such material to treat the same in confidence. The TIA may not divulge any such information unless it is directed to do so by any statutory entity that has the power under law to require its disclosure or is to enforce or assert any right or privilege of the statutory entity and/ or the TIA.

4.10 Correspondence with Bidder:

- OSRTC shall not entertain any correspondence with any Bidder in relation to acceptance or rejection of any Bid.

4.11 Earnest Money Deposit (EMD):

- The Bidder shall furnish as part of its Bid, Earnest Money Deposit (EMD) amount to the sum of **INR 35,00,000/-** (Rupees Thirty-Five Lakhs) in shape of Banker's cheque / demand draft /Bank Guarantee to be made from any Nationalized or Scheduled Commercial Bank in favor of Accounts Officer OSRTC, Bhubaneswar.
- OSRTC shall not be liable to pay any interest on the Earnest Money Deposit (EMD) so made and the same shall be interest free. EMD shall be non-transferable. Any Bid not accompanied by the Earnest Money Deposit (EMD) & Tender processing fee shall be rejected by OSRTC as non- responsive*.
- The Earnest Money Deposit (EMD) of unsuccessful Bidder will be returned by OSRTC, without any interest, within 60 days from the date of opening of the financial bid or when the Bidding process is cancelled by TIA. The Bidder may by specific instructions in writing to OSRTC give the details for name and address of the person in whose favor the said demand draft shall be drawn by OSRTC for refund, failing which it shall be drawn in the name of the Bidder.
- The successful Bidder's Earnest Money Deposit (EMD) will be returned, without any interest, upon such Successful Bidder signing the Agreement and furnishing the Performance Bank Guarantee in accordance with the provisions thereof.
- OSRTC shall be entitled to forfeit and appropriate the Earnest Money Deposit (EMD) as mutually agreed genuine pre-estimated compensation/ Damages to OSRTC in any of the events specified in. The Bidder, by submitting its Bid pursuant to this RFP, shall be deemed to have acknowledged and confirmed that OSRTC will not suffer loss and damage on account of withdrawal of its Bid

or for any other default by the Bidder during the Bid validity period. No relaxation of any kind on Earnest Money Deposit (EMD) shall be given to any Bidder.

- The Earnest Money Deposit (EMD) shall be forfeited and appropriated by OSRTC as mutually agreed genuine pre-estimated compensation and Damages payable to OSRTC for, inter alia, time, cost, and effort of OSRTC without prejudice to any other right or remedy that may be available to OSRTC hereunder or otherwise, under the following conditions:
  - If a Bidder engages in a corrupt practice, fraudulent practice, coercive practice, undesirable practice, or restrictive practice as specified in this RFP.
  - If a Bidder withdraws its Bid during the period of Bid validity as specified in this RFP and as extended by the Bidder from time to time.
  - In the case of successful Bidder, fails within the specified time limit:
    I. to sign the Agreement and/or
    II. to furnish the Performance Bank Guarantee within the period prescribed in the Contract Agreement; or
    III. In case the successful Bidder, having signed the Agreement, commits any breach thereof prior to furnishing the Performance Bank Guarantee.

5. Evaluation of Bids

5.1 Bid Evaluation Committee

- OSRTC shall constitute a Bid Evaluation Committee to evaluate the responses of the bidder(s).
- The Bid Evaluation Committee shall evaluate the responses to the RFP (Pre-qualification and Technical) and all supporting documents/ documentary evidence. Inability to submit requisite supporting documents/ documentary evidence may lead to rejection.
- The decision of the Bid Evaluation Committee in the evaluation of responses to the RFP shall be final. No correspondence will be entertained outside the process of negotiation / discussion with the Committee.
- The Bid Evaluation Committee may ask for meetings with the bidder to seek clarifications on their proposals. The bidder shall submit requisite supporting documents/ certificates on the credentials. The committee may visit bidder's site to validate the credentials/ citations claimed by the bidder.
- Each of the responses shall be evaluated as per the criteria and requirements specified in this RFP.
- The Bid Evaluation Committee would submit its decision to OSRTC whose decision would be final and binding upon the bidder.
- In case of a single bid, OSRTC reserves the right to accept or reject the bid on recommendations of Bid Evaluation Committee at its discretion.
- The Bid Evaluation Committee reserves the right to accept or reject any or all bids without giving any reasons thereof.
- The Bid Evaluation Committee reserves the right to reject any or all proposals on the basis of any deviations.

5.2 Overall Evaluation Process

- The evaluation of the Bids shall be done in 3 Steps where the Bidder shall be first evaluated against the Pre-Qualification Criteria mentioned in this RFP.
- Only those bidders who meet the Pre-qualification criteria shall be considered for further evaluation of the Technical Proposal.
- To facilitate the evaluation of the Bid, OSRTC may at its sole discretion, seek clarifications from any Bidder regarding its Bid. Such clarifications shall be provided by the Bidder within the time specified by OSRTC for this purpose and all clarifications shall be in writing.
- If any Bidder does not provide clarifications sought as above, within the prescribed time, its Bid shall be liable to be rejected. In case the Bid is not rejected, OSRTC may proceed to evaluate the Bid by interpreting the required clarification to the best of its understanding and the Bidder shall be barred from subsequently questioning such interpretation by OSRTC.
- Any information contained in the Bid shall not in any way be construed as binding on OSRTC, its agents, successors, or assigns, but shall be binding against the Bidder if the Project is subsequently awarded to it under the Bidding Process based on such information.
- OSRTC reserves the right not to proceed with the Bidding Process at any time without notice or liability and to reject any Bid without assigning any reasons.

5.3 Pre-Qualification Proposal Criteria

Before opening and evaluation of the technical proposals, bidder's eligibility would be evaluated to assess their compliance to the following pre-qualification criteria. Bidders failing to meet these criteria or not submitting requisite proof for supporting pre-qualification criteria are liable to be rejected at the preliminary level. The bidder shall fulfill all the following Pre-Qualification criteria independently, as on date of submission of bid.

S.No.	Basic Requirement	Specific Requirement	Documents required
PQ1	Tender Document fees	Tender fee in shape of Banker's Cheque / Demand Draft to be made from any Nationalized Bank or Scheduled Commercial Bank in favour of Accounts Officer OSRTC, Bhubaneswar	Bank/Demand Draft
PQ2	EMD	EMD in shape of Banker's Cheque / Demand Draft to be made from any Nationalized Bank or Scheduled Commercial Bank in favour of Accounts Officer OSRTC, Bhubaneswar	Bank/Demand Draft

S.No.	Basic Requirement	Specific Requirement	Documents required
PQ3	Legal Entity	Bidder shall be any ONE of the following: • A company incorporated in India under the Companies Act, 1956 or Companies Act 2013 (as amended till date), and subsequent amendments thereto. • An entity registered under the LLP Act 2008 and subsequent amendments thereto. • Partnership firms registered under Indian Partnership Act, 1932 *The bidder should have been operating for the last 7 years as on the date of publishing of tender notice (including name change/ impact of mergers or acquisitions).* *In case of Consortium only two companies can form consortium (Including Lead Bidder)*	• Copy of Certificate of Incorporation/ Registration/ /Partnership deed signed by Authorized Signatory of the Bidder. • Copy of PAN/ TIN/ TAN • Valid GSTIN and copy of GST Registration Certificate.
PQ4	Annual Turnover	Minimum **average annual turnover** (Lead Bidder in case of Consortium) of the organization must be **INR 200 Crores** from the last three (3) financial years (FY 19-20, FY 20-21, FY 21-22)	Audited balance Sheet and Profit & Loss account statement of the bidder for each of the last 3 audited financial years. Certificate duly signed by Statutory Auditor of the Bidder for total turnover.
PQ5	Net worth	The Bidder (All members in case of a consortium) should have positive net worth for last three (3) years. (FY 19-20, FY 20-21, FY 21-22)	Certificate from the Statutory Auditor clearly stating Positive Net worth as defined in this RFP in the stipulated format under Annexure-X
PQ6	Certifications	The Bidder (Lead bidder in case of Consortium) should have ISO 9001, ISO 27001, ISO 20000:2015 and **CMMI Level 5**	Copy of valid certificates

S.No.	Basic Requirement	Specific Requirement	Documents required
PQ7	Experience in AFCS	The Bidder should have experience of at least two qualifying AFCS project where qualifying AFCS project shall mean AFCS project for intracity/intercity public transit organization like bus/metro (state govt. or ULB) in India wherein the bidder shall have provided AFC system software application for Fare Collection, with minimum of 100 (one hundred) nos. EMV certified ETM Machines/Validators/Ticket Office Machines. The qualifying AFC project should have been **completed** within the past 5 (Five) years from the date of submission of the bid submission.	Only Completion certificate duly signed by client will be considered for the criteria.
PQ8	Experience of National Common Mobility card (NCMC) / Common Mobility Card (CMC)	The Bidder should have experience of at least two qualifying projects where in NCMC / CMC are enabled to accept the payment.	Only Completion certificate duly signed by client will be considered for the criteria.
PQ9	Experience in AVLS & PIS	Bidder should have an experience of two qualifying AVLS Projects where Qualifying AVLS project shall mean intra city/intercity public transit system for a public transport (state govt. or ULB) with a fleet of at least 300 buses wherein the bidder has provided AVL system software and hardware to monitor, manage and established command and control centre to monitor and control transit operations. In addition, the bidder should have integrated the AVL system with Passenger Information sub-system to provide route and ETA (expected travel arrival) to passengers at bus station/depot/terminal via PIS Hardware. The qualifying AVL projects should have been **completed** within the past 5 (Five)	Only Completion certificate duly signed by client will be considered for the criteria.

S.No.	Basic Requirement	Specific Requirement	Documents required
		years from the date of submission of the bid.	
PQ10	Experience in Planning & Scheduling (P&S)	The Bidder have experience of at least two qualifying P&S projects where qualifying P&S project shall mean P&S Project for intracity/intercity public transit organization (state govt. or ULB) in India wherein the bidder shall have provided P&S system software application for a fleet/Conductor Duty management of at least 300 buses. P&S System Shall have Scheduling Software, and Roster of buses and crew. The P&S projects should have been **completed** within the past 5 (Five) years from the date of submission of the bid.	Only Completion certificate duly signed by client will be considered for the criteria.
PQ11	Blacklisting / Bankruptcy/ Insolvency	The Bidder (Lead Bidder and including all consortium members) should not be declared as bankrupt or shall not have any proceeding for bankruptcy or insolvency/ debarred/ blacklisted / banned/ not being under declaration of ineligibility for corrupt or fraudulent practices or non-delivered or non-performance by any State/Central Government / PSU/ Autonomous Body under any Law in India for last three years.	Signed by the Authorized Signatory of the Bidder and consortium members on Company letterhead

Note: Any entity which has been barred or disqualified either by any State Government in India (SG) or any Union Territory Administration in India (UT) or Government of India (GoI), or any of the agencies of SG/UT/GoI from participating in any project and the bar subsists as on the date of Bid submission, would be disqualified. It is mandatory to submit the specified documents in support of the above Prequalification criteria and the company/firm/agency shall be disqualified should it fail to provide any of the specified documents.

OSRTC may seek clarifications from the bidder on the Pre-qualification Criteria on the submitted documents, however no additional document can be produced by bidder as pre-qualification clarification except the documents submitted in bid. Any of the clarifications by the bidder on the documents submitted against the Pre-qualification Criteria should not have any financial implications.

5.4 Selection Procedure:

Quality cum cost-based selection (QCBS) will be followed during the overall selection process. Only the bidders fulfilling the Pre-qualification Criteria are allowed to further participate in this tender. The Envelope II marked "Technical Bid" shall be opened first. The Envelope III marked "Financial Bid" shall be kept sealed for opening as per date mentioned in this RFP. The Envelope III marked "Financial Bid" shall be kept sealed for opening as per date to be intimated by the TIA.

Technical Bid Score carries 70% of the weightage while Commercial bid Score Marks carries 30% of the weightage.

The Bidders would be technically evaluated out of 100 marks. All the bidders who will secure overall minimum of 70% (80 Marks out of 100 across all components) in Technical Evaluation will be considered as technically qualified. The Technical Evaluation Committee will be assigning technical marks individually. The final technical marks for a bidder will be calculated as the average of the marks assigned.

The overall score will be calculated as follows: -

Technical Score of the Bidder (TS) = Technical Marks scored by bidder X 70%

Commercial Score of the Bidder (CS) = Commercial Quote of the Lowest Bidder x 100 x 30% / Commercial Quote of the Bidder.

Final Composite Bid Score (CBS)

The Technical Score (TS) and Commercial Score (CS) secured by each bidder will be considered for computing the Final Composite Bid Score.

The bidder securing the highest Composite Bid Score will be adjudicated as the most responsive Bidder for award of the Project.

The overall score will be calculated as follows: -

CBS = TS + CS

Where,

CBS = Final Composite Bid Score

TS = Total Technical score of the bidder (out of maximum of 100 marks)

CS = Commercial Score of the bidder

5.5 Evaluation of Technical Bid:

- **Technical Mark (TM)** will be given based on the evaluation of the Technical Bid and based on the documents submitted by the eligible bidder as per the Evaluation Criteria mentioned in the RFP.
- An actual **technical mark below 80** shall disqualify the bid as technically non-responsive. A financial bid of only technically responsive bidders shall be opened.

5.6 Technical Evaluation Criteria:

The eligible bidders shall be evaluated based on the following criteria and technical mark shall be awarded to the bidders.

Technical evaluation criteria:

S.N	Parameter	Description	Max. Marks	Documents Required
A	**Organization profile**		**20**	
A.1	Organization's Turnover	The bidder should have an average annual turnover (Combine turnover in case of Consortium) of at least INR 200 Crores in last 3 financial years (FY 2019-20, 2020-21 &2021-22) Mark Allocation will be as follows. • 200 - 250 Cr. - 1 Marks • 251 - 300 Cr. - 2 Marks • 301 - 350 Cr. - 3 Marks • More than 400 Cr - 5 Marks	5	Extracts from the audited Balance sheet and Profit & Loss statements, Certificate from the Statutory Auditor
A.2	Number of IT skilled on roll resources working with the organization as on 31st March, 2019	500 resources = 5 marks Every additional 50 On Roll Employees – Additional 1 marks each (maximum 5 Marks)	10	Undertaking of HR Certificate
A.3	Quality Certification	• ISO 9001, ISO 27001, ISO 20000: 2015 - 2 Marks • CMMI Level 5 – Additional 3 marks (Maximum 5 marks)	5	Copy of valid certifications
B	**Bidder's Experience**		**65**	
B.1	Experience in AVLS & PIS	• The Bidder shall have experience of at least two qualifying AVLS projects. "Qualifying AVLS project shall mean intra city/intercity public transit system for a bus based public transport (state govt. or ULB) with a fleet of at least 300 buses wherein the bidder has provided AVL system software and hardware to monitor, manage and established command and control centre to monitor and control transit operations. In addition, the bidder should have integrated the AVL system with Passenger Information sub-system to provide route and ETA (expected travel arrival) to passengers at bus station/depot/terminal via PIS Hardware. The qualifying AVL projects should have	**10**	Only Completion certificate duly signed by client will be considered for the criteria.

S.N	Parameter	Description	Max. Marks	Documents Required
		been completed within the past 5 (Five) years from the date of submission of the bid. • One Project with 300 buses – 5 Marks 2.5 marks will be allotted for every additional 300 units subject to a maximum of 5 additional marks."		
B.2	Specific Experience in Planning & Scheduling System(P&S)	• The Bidder have experience of at least two qualifying P&S projects where qualifying P&S project shall mean P&S Project for intracity/intercity public transit organization (state govt. or ULB) in India wherein the bidder shall have provided P&S system software application for a fleet of at least 300 buses. P&S System shall have Scheduling Software, and Roster of buses and crew. The P&S projects should have been completed within the past 5 (Five) years from the date of submission of the bid. 2 Projects – 3 Marks 1 Marks will be allotted per project subject to a maximum of 2 additional marks.	5	Only Completion certificate duly signed by client will be considered for the criteria.
B.3	Specific Experience in Transit Management System (TMS)	• The Bidder have experience on at least two qualifying TMS projects "Qualifying TMS project means TMS project for intra-city/intercity public transit system for a bus based public transport organization (state govt. or ULB) in India with a fleet of at least 100 (one hundred) buses wherein the bidder shall have provided integrated solution comprising Depot Management System qualifying TMS project means TMS project for intra-city/intercity public transit system for a bus based public transport organization (state govt. or ULB) in India with a fleet of at least 100 (one hundred) buses wherein the bidder shall have provided integrated solution comprising Depot Management System essentially integrated with Inventory Management System with additional integration of two or more	5	Only Completion certificate duly signed by client will be considered for the criteria.

S.N	Parameter	Description	Max. Marks	Documents Required
		component such as Workshop Management System, Fuel Management System, Tyre Management System". The TMS projects should have been completed within the past 5 (Five) years from the date of submission of the bid 2 Projects – 3 Marks 1 Marks will be allotted per project subject to a maximum of 2 additional marks."		
B.4	Experience in AFCS Projects	• The Bidder have experience of at least two qualifying AFCS project where qualifying AFCS project shall mean AFCS project for intracity/intercity public transit organization (state govt. or ULB) in India wherein the bidder shall have provided AFC system software application for Fare Collection, with minimum of 100 (one hundred) nos. EMV certified ETM Machines/Validators/Ticket Office Machines. The qualifying AFC project should have been completed within the past 5 (Five) years from the date of submission of the bid submission 2 Projects – 6 Marks 3 projects - 10 Marks.	15	Only Completion certificate duly signed by client will be considered for the criteria.
B.5	Experience of supply of the EMV Certified ETM	Experience of supply installation of L1 & L2, EMV certified ETM machines in AFC Project 2000 - 5000 ETM machines - 4 marks 5001 - 7000 ETM Machines - 6 Marks 7001 - 9000 ETM Machines - 8 Marks Above 9001 - 10 Marks	15	List of the project with no ETIM supplied.
B.6	Experience of National Common Mobility card (NCMC)	The Bidder should have experience of at least two qualifying AFCS project where in qualifying project bidder should have payment acceptance through NCMC. The qualifying projects should have been commissioned within the past 5 (Five) years from the date of submission of the bid and project should be in operations for 12 months.	15	Agreement along with Customer certificate to be submitted.

S.N	Parameter	Description	Max. Marks	Documents Required
		2 projects - 10 marks. 3 projects - 15 marks		
C	**Solution**		**15**	
C.1	Complete & clear understanding of the project & proposed solution architecture including minimum following components but not limited only:	1) Conceptual Design, Hardware & software solution architecture 2) Integration architecture & mechanism 3) Security mechanism & architecture 4) Products & software selection criteria 5) Quality assurance Plan 6) Project Approach & Methodology	15	Technical Proposal.

5.7 Evaluation of Financial Bid:

The bidder should necessarily give the financial details in the **Annexure XXII: Format for Financial Proposal** of this RFP. All the financial details should be given in the prescribed format only and inaccordance with the details and terms and conditions as mentioned in this RFP (hence the bidderis expected to understand the RFP in all respects). In case the selected bidder does not quote for or provision for any other expenses required to meet the requirements of the RFP, he shall be solely responsible for those and would be required to provide them, without any additional cost to TIA.

- This is QCBS evaluation bid and contract will be awarded to the bidder who will have maximum score in composite calculation as described above.
- If the two bidders composite score became same, then OSRTC will consider the bidder with Lowest Financial Bid.
- The bidder should also provide the detailed break-up of the Tax/ Charges which bidder would be submitting to Government against every transaction separately with Financial Proposal.
- The Financial Proposal shall not contain any technical information.
- The technical proposal should not contain any financial information, if found some shall be considered as rejected.

The holding or acquisition of equity or control, as above, shall include direct or indirect holding/ acquisition, including by transfer, of the direct or indirect legal or beneficial ownership or control, by persons acting for themselves or in concert and in determining such holding or acquisition, OSRTC shall be guided by the principles, precedents and definitions contained in the Securities and Exchange Board of India (Substantial Acquisition of Shares and Take-overs) Regulations, 1997, or any substitute thereof, as in force on the date of such acquisition. The Bidder shall promptly inform OSRTC of any change in the shareholding, as above, and failure to do so shall render the Bidder liable for disqualification from the Bidding Process.

5.8 Selection of Bidder:

- After selection, a Letter of Award (LOA) shall be issued, in duplicate, by OSRTC to the Successful Bidder and the Successful Bidder shall, within 7 (seven) days of the receipt of the LOA, the bidders shall have to sign and return the duplicate copy of the LOA in acknowledgement thereof. In the event the duplicate copy of the LOA, duly signed by the Successful Bidder is not received by the stipulated date, OSRTC may, unless it consents to extension of time for submission thereof, appropriate the EMD of such Bidder as mutually agreed genuine pre-estimated loss and damage suffered by OSRTC on account of failure of the Successful Bidder to acknowledge the LOA.
- After acknowledgement of the LOA as aforesaid by the Successful Bidder, the Contract Agreement shall be executed between TIA and the Successful Bidder within 30 days from the date of issue of LOA. The Date of execution of the Contract Agreement between TIA and Successful Bidder shall be identified as Commercial Operation Date (COD).
- The Successful Bidder shall not be entitled to seek any deviation, modification, or amendment in the Contract Agreement.

5.9 Contacts during Bid Evaluation:

- Bids shall be deemed to be under consideration immediately after they are opened and until such time as OSRTC makes official intimation of award/ rejection to the Bidder. While the Bids are under consideration, Bidder and/ or their representatives or other interested parties are advised to refrain from contacting by any means, OSRTC and/ or their employees/ representatives on matters related to the Bids under consideration.

5.10 Signing of Contract:

- The Agreement will be signed as per RFP, after selection of Successful Bidder. TIA shall have the right to annul the award in case there is a delay of more than 30 days in signing of the Agreement from the date of issue of LOA by TIA, for reasons attributable to the selected bidder.

5.11 Failure to agree with the Terms & Conditions of this RFP:

- Failure of the successful bidder to agree with the terms and conditions of this RFP shall constitute sufficient grounds for the annulment of the award, in which event TIA may call for new proposals and appropriate the Performance Bank Guarantee or EMD paid by the selected bidder.

5.12 Performance Bank Guarantee:

- Performance Bank Guarantee is governed for supplies and services as follows:
  - The bidder shall carry out the services in conformity with the requirements of this RFP, generally accepted professional and technical norms relevant to such projects and to the satisfaction of TIA.
  - The Earnest Money Deposited at the time of bid submission would be given back to the selected bidder on payment of Performance Bank Guarantee.
- The selected bidder shall furnish Performance Bank Guarantee as follows:
  - After acknowledgement of the work order as aforesaid by the selected firm, the selected agency must submit performance security in the form of Performance Bank Guarantee from a scheduled commercial/ nationalized bank of India in favor of Odisha State Road Transport Corporation payable at Bhubaneswar. Amount of the performance security shall be **3% of Total Contract Value**.

- The Performance Bank Guarantee should have been issued by a Scheduled Nationalized Bank or Commercial Bank in India. For the avoidance of doubt, Scheduled Bank shall mean a bank as defined under Section 2(e) of the Reserve Bank of India Act, 1934.
- The Performance Bank Guarantee should be furnished within 15 Business Days from the date of issue of Letter of Award (LOA).
- The Performance Bank Guarantee may be discharged/ returned by TIA upon being satisfied that there has been due performance of the obligations of the successful bidder under the contract for the entire project duration. However, no interest shall be payable on the Performance Bank Guarantee.
- OSRTC shall also be entitled to make recoveries from the Performance Bank Guarantee on the following grounds:
    i. Any amount imposed as a fine by OSRTC for irregularities Committed by the successful bidder.
    ii. Any amount which OSRTC becomes liable to the Government/Third party on behalf of any default of the bidder or any of his/her/their agent/ employees or staff.
    iii. Any payment/fine made under the order/judgment of any court/consumer forum or law enforcing agency or any person working on his behalf.
    iv. Any other outstanding amount.
- Once the amount under this clause is debited, the bidder shall reimburse the Performance Bank Guarantee to the extent the amount is debited within 15 days of such debit by TIA failing which it will be treated as breach of agreement and may lead to termination of agreement with forfeiture of all amounts including interest free Performance Bank Guarantee in favor of TIA.

5.13 Execution of Agreement:

After acknowledgement of the Work order as aforesaid by the selected firm, it shall execute the Contract Agreement within the period of 7 days from the date of issuance of Work order. The selected Agency shall also deposit the performance security before the execution of the contract agreement. The successful bidder shall not be entitled to seek any deviation in the Agreement.

5.14 Commencement of Agreement:

The selected Agency shall commence the assignment within 7 days from the date of signing of the Agreement. If the bidder fails to commence the assignment as specified herein, OSRTC may, unless it consents to extension of time thereof may forfeit the Performance Security and appropriate the same by OSRTC.

5.15 Proprietary Data:

All documents and other information provided by OSRTC or submitted by the bidder to OSRTC shall remain or become the property of OSRTC. The bidders are to treat all information as strictly confidential. OSRTC will not return any Proposal, or any information related thereto. All information collected, analysed, processed or in whatever manner provided by the Consultant to OSRTC in relation to the Consultancy shall be the property of OSRTC.

- The system should be able to generate alerts based on route deviation / geo-fencing crossing / missed stoppages on the dashboard.
- The application should allow role-based access to the portal.

- The portal will be hosted on cloud proposed by the bidder.

Annexures

Annexure I: Covering Letter (On the Letterhead of the applicant)

To Date: _____

The General Manager (Admin.)
Odisha State Road Transport Corporation (OSRTC)
Paribahan Bhavan, Sachivalaya Marg, Unit-II,
Bhubaneswar-751001, Odisha

Sub: Selection of System Integrator for Integrated Transport Management System (ITMS) for OSRTC

Being duly authorized to represent and act on behalf of.....(hereinafter referred to as "the Applicant") and having reviewed and fully understood all the Proposal requirements and information provided and collected, the undersigned hereby submits the Proposal on behalf of.....*(Name of Applicant*) for the captioned Project with the details as per the requirements of the RFP, for your evaluation. We confirm that our Proposal is valid for a period of 180 days from the last date of submission of proposal.

We also hereby agree and undertake as under

Notwithstanding any qualifications or conditions, whether implied or otherwise, contained in our Proposal we hereby represent and confirm that our Proposal is unconditional in all respects, and we agree to the terms and conditions of the Request for Proposal.

We hereby certify and confirm that in the preparation and submission of our Proposal, we have not acted in concert or in collusion with any other applicant or other person(s) and also not done any act, deed or thing which is or could be regarded as anti-competitive.

Yours faithfully

Signature
(*Name of Applicant)*

Duly signed by the Authorised Signatory of the Applicant

(Name, Title, and Address of the Authorised Signatory

Annexure II: Request for Clarification

The bidder requiring specific points of clarification may communicate with OSRTC during the specified period using the following format.

Bidder's Request for Clarification				
<<Name of Organization submitting query/ request for clarification>>				
<<Full address of the Organization including e-mail, phone and fax for all points of contact>>				
Sl. No.	RFP Reference (Section No., Clause, Page No.)	Content of RFP	Clarification Sought	OSRTC Response (space to be left blank by the Bidder)
1				
2				
3				

Annexure III: Pre-Qualification Checklist Document

S.No.	Basic Requirement	Specific Requirement	Page No.	Documents required
PQ1	Tender Document fees	Tender fee in shape of Banker's Cheque / Demand Draft to be made from any Nationalized Bank or Scheduled Commercial Bank in favour of Accounts Officer OSRTC, Bhubaneswar		Bank/Demand Draft
PQ2	EMD	EMD in shape of Banker's Cheque / Demand Draft to be made from any Nationalized Bank or Scheduled Commercial Bank in favour of Accounts Officer OSRTC, Bhubaneswar		Bank/Demand Draft
PQ3	Legal Entity	Bidder shall be any ONE of the following: • A company incorporated in India under the Companies Act, 1956 or Companies Act 2013 (as amended till date), and subsequent amendments thereto. • An entity registered under the LLP Act 2008 and subsequent amendments thereto. • Partnership firms registered under Indian Partnership Act, 1932 *The bidder should have been operating for the last 7 years as on the date of publishing of tender notice (including name change/ impact of mergers or acquisitions).* *In case of Consortium only two companies can form consortium (Including Lead Bidder)*		• Copy of Certificate of Incorporation/ Registration/ /Partnership deed signed by Authorized Signatory of the Bidder. • Copy of PAN/ TIN/ TAN • Valid GSTIN and copy of GST Registration Certificate.

S.No.	Basic Requirement	Specific Requirement	Page No.	Documents required
PQ4	Annual Turnover	Minimum **average annual turnover** (Lead Bidder's turnover in case of Consortium) of the organization must be **INR 200 Crores** from the last three (3) financial years (FY 19-20, FY 20-21, FY 21-22)		Audited balance Sheet and Profit & Loss account statement of the bidder for each of the last 3 audited financial years. Certificate duly signed by Statutory Auditor of the Bidder for total turnover.
PQ5	Net worth	The Bidder (All members in case of a consortium) should have positive net worth for last three (3) years. (FY 19-20, FY 20-21, FY 21-22)		Certificate from the Statutory Auditor clearly stating Positive Net worth as defined in this RFP in the stipulated format under Annexure-X
PQ6	Certifications	The Bidder (Lead bidder in case of Consortium) should have ISO 9001, ISO 27001, ISO 20000:2015 and CMMI Level 5		Copy of valid certificates
PQ7	Experience in AFCS	The Bidder should have experience of at least two qualifying AFCS project where qualifying AFCS project shall mean AFCS project for intracity/intercity public transit organization like bus/metro (state govt. or ULB) in India wherein the bidder shall have provided AFC system software application for Fare Collection, with minimum of 100 (one hundred) nos. EMV certified ETM Machines/Validators/Ticket Office Machines. The qualifying AFC project should have been completed within the past 5 (Five) years from the date of submission of the bid submission.		Only Completion certificate duly signed by client will be considered for the criteria.

S.No.	Basic Requirement	Specific Requirement	Page No.	Documents required
PQ8	Experience of National Common Mobility card (NCMC) / Common Mobility Card (CMC)	The Bidder should have experience of at least two qualifying project where in NCMC / CMC are enabled to accept the payment.		Only Completion certificate duly signed by client will be considered for the criteria.
PQ9	Experience in AVLS & PIS	Bidder should have an experience of two qualifying AVLS Projects where Qualifying AVLS project shall mean intra city/intercity public transit system for a public transport (state govt. or ULB) with a fleet of at least 300 buses wherein the bidder has provided AVL system software and hardware to monitor, manage and established command and control centre to monitor and control transit operations. In addition, the bidder should have integrated the AVL system with Passenger Information sub-system to provide route and ETA (expected travel arrival) to passengers at bus station/depot/terminal via PIS Hardware. The qualifying AVL projects should have been completed within the past 5 (Five) years from the date of submission of the bid.		Only Completion certificate duly signed by client will be considered for the criteria.
PQ10	Experience in Planning & Scheduling (P&S)	The Bidder have experience of at least two qualifying P&S projects where qualifying P&S project shall mean P&S Project for intracity/intercity public transit organization (state govt. or ULB) in India wherein the		Only Completion certificate duly signed by client will be considered for the criteria.

S.No.	Basic Requirement	Specific Requirement	Page No.	Documents required
		bidder shall have provided P&S system software application for a fleet/Conductor Duty management of at least 300 buses. P&S System Shall have Scheduling Software, and Roster of buses and crew. The P&S projects should have been completed within the past 5 (Five) years from the date of submission of the bid.		
PQ11	Blacklisting / Bankruptcy/ Insolvency	The Bidder (Lead Bidder and including all consortium members) should not be declared as bankrupt or shall not have any proceeding for bankruptcy or insolvency/ debarred/ blacklisted / banned/ not being under declaration of ineligibility for corrupt or fraudulent practices or non-delivered or non-performance by any State/Central Government / PSU/ Autonomous Body under any Law in India for last three years.		Signed by the Authorized Signatory of the Bidder and consortium members on Company letterhead

Annexure IV: Details of Bidder

1 Name :

2 Country of incorporation:

3 Address of the corporate headquarters and its branch office(s), if any, in India

4 Date of incorporation and / or commencement of business

5 Brief description of the Company including details of its main lines of business and proposed role and responsibilities in this Project.

6 Details of individual(s) who will serve as the point of contact/ communication.

- Name, Designation, Company, Address, Telephone Number, E-Mail Address, Fax Number

7 Particulars of the Authorized Signatory of the Bidder

- Name, Designation, Company, Address, Telephone Number, E-Mail Address, Fax Number

A statement by the Bidder disclosing material non-performance or contractual non-compliance in past projects, contractual disputes, and litigation/ arbitration in the recent past (Attach extra sheets, if necessary)

Annexure V: Power of Attorney (On stamp Paper)

Know all men by these presents, we .....(name of the firm and address of the registered office) do hereby irrevocably constitute, nominate, appoint, and authorize Mr./ Ms. (name), …… son/daughter/wife of …… and presently residing at ……., who is presently employed with us and holding the position of , as our true and lawful attorney (hereinafter referred to as the "Attorney") to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our Bid for pre- qualification and submission of our Tender **for Selection of System Integrator(SI) for System Integrator for Integrated Transport Management System (ITMS) for Odisha State Road Transport Corporation (OSRTC)** including but not limited to signing and submission of all Bids, and other documents and writings, participate in Pre- bid and other conferences and providing information/ responses to OSRTC, representing us in all matters before OSRTC, signing and execution of all contracts including the Contract Agreement and undertakings consequent to acceptance of our Tender, and generally dealing with OSRTC in all matters in connection with or relating to or arising out of our Tender for the said Project and/ or upon award thereof to us and/or till the entering into of the Contract Agreement with OSRTC.AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds, and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE, [_____], THE ABOVE-NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS [____] DAY OF [____], 2023.

For

_____

(Signature, name, designation, and address)

Witnesses:

1.

2.

(Notarized)

Accepted

(Signature)

Name, Title and Address of the Attorney

Notes:

1. 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.

2. Wherever required, the Bidder should submit for verification the extract of the charter documents and documents such as a board or shareholders' resolution/ power of attorney in favor of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Bidder.

Annexure VI: Non-Blacklisting declaration

{On Company Letterhead}

Format of self-certificate stating that the Entity/Promoter/s / Director/s of Entity are not blacklisted.

Anti-Blacklisting Certificate

M/s.....(Name of the bidder), (the names and addresses of the registered office) hereby certify and confirm that we or any of our promoter(s)/ director(s) are not barred by State Government / any other Government entity or blacklisted by any state government or central government / department / Local Government / agency in India or from abroad from participating in Project/s, either individually or as member of a Consortium/JV as on the_____(Last date of submission of bid).

We further confirm that we are aware that our application for the '**Selection of system integrator for System Integrator for Integrated Transport Management System (ITMS)for Odisha State Road Transport Corporation (OSRTC)'** would be liable for rejection in case any material misrepresentation is made or discovered with regard to the requirements of this RFP at any stage of the bidding process or thereafter during the agreement period. Dated this …. Day of……. 2023.

_____

Name of the bidder

_____

Signature of the Authorized person

_____

Name of the Authorized Person

Annexure VII: Self-declaration for Non-Performance

(on Company Letterhead)

I/ We …….. hereby declare that my / our firm M/S .....have successfully executed the work order assigned by the State Government / any other Government entity or any state government or central government / department / Local Government / agency in India. There is no remark of non- performance or non-compliance in any of our past projects, or any contractual dispute / litigation / arbitration in the recent past. Dated this ……. Day of …. 20…….

_____

Name of the bidder

_____

Signature of the Authorized person

_____

Name of the Authorized Person

Annexure VIII: Technical capacity of the Bidder

Sl.No.	Client Name	Year	Total No. of Equipment provided to the client	Work Order / Client Certificate

Date:

Annexure IX: Technical Evaluation Checklist

S.N	Parameter	Description	Page Number	Documents Required
A	**Organization profile**			
A.1	Organization's Turnover	The bidder should have an average annual turnover (Combine turnover in case of Consortium) of at least INR 200 Crores in last 3 financial years (FY 2019-20, 2020-21 &2021-22) Mark Allocation will be as follows. • 200 - 250 Cr. - 1 Marks • 251 - 300 Cr. - 2 Marks • 301 - 350 Cr. - 3 Marks • More than 400 Cr - 5 Marks		Extracts from the audited Balance sheet and Profit & Loss statements, Certificate from the Statutory Auditor
A.2	Number of IT skilled on roll resources working with the organization as on 31st March, 2019	500 resources = 5 marks Every additional 50 On Roll Employees – Additional 1 marks each (maximum 5 Marks)		Undertaking of HR Certificate
A.3	Quality Certification	• **ISO 9001, ISO 27001, ISO 20000: 2015 - 2 Marks** • **CMMI Level 5 – Additional 3 marks (Maximum 5 marks)**		Copy of valid certifications
B	**Bidder's Experience**			
B.1	Experience in AVLS & PIS	• The Bidder shall have experience of at least two qualifying AVLS projects. "Qualifying AVLS project shall mean intra city/intercity public transit system for a bus based public transport (state govt. or ULB) with a fleet of at least 300 buses wherein the bidder has provided AVL system software and hardware to monitor, manage and established command and control centre to monitor and control transit operations. In addition, the bidder should have integrated the AVL system with Passenger Information sub-system to provide route and ETA (expected travel arrival) to passengers at bus station/depot/terminal via PIS Hardware. The qualifying AVL projects should have		Only Completion certificate duly signed by client will be considered for the criteria.

S.N	Parameter	Description	Page Number	Documents Required
		been completed within the past 5 (Five) years from the date of submission of the bid. • One Project with 300 buses – 5 Marks 2.5 marks will be allotted for every additional 300 units subject to a maximum of 5 additional marks."		
B.2	Specific Experience in Planning & Scheduling System(P&S)	• The Bidder have experience of at least two qualifying P&S projects where qualifying P&S project shall mean P&S Project for intracity/intercity public transit organization (state govt. or ULB) in India wherein the bidder shall have provided P&S system software application for a fleet of at least 300 buses. P&S System shall have Scheduling Software, and Roster of buses and crew. The P&S projects should have been completed within the past 5 (Five) years from the date of submission of the bid. 2 Projects – 3 Marks 1 Marks will be allotted per project subject to a maximum of 2 additional marks.		Only Completion certificate duly signed by client will be considered for the criteria.
B.3	Specific Experience in Transit Management System (TMS)	• The Bidder have experience on at least two qualifying TMS projects "Qualifying TMS project means TMS project for intra-city/intercity public transit system for a bus based public transport organization (state govt. or ULB) in India with a fleet of at least 100 (one hundred) buses wherein the bidder shall have provided integrated solution comprising Depot Management System qualifying TMS project means TMS project for intra-city/intercity public transit system for a bus based public transport organization (state govt. or ULB) in India with a fleet of at least 100 (one hundred) buses wherein the bidder shall have provided integrated solution comprising Depot Management System essentially integrated with Inventory Management System with additional integration of two or more		Only Completion certificate duly signed by client will be considered for the criteria.

S.N	Parameter	Description	Page Number	Documents Required
		component such as Workshop Management System, Fuel Management System, Tyre Management System". The TMS projects should have been completed within the past 5 (Five) years from the date of submission of the bid 2 Projects – 3 Marks 1 Marks will be allotted per project subject to a maximum of 2 additional marks."		
B.4	Experience in AFCS Projects	The Bidder have experience of at least two qualifying AFCS project where qualifying AFCS project shall mean AFCS project for intracity/intercity public transit organization (state govt. or ULB) in India wherein the bidder shall have provided AFC system software application for Fare Collection, with minimum of 100 (one hundred) nos. EMV certified ETM Machines/Validators/Ticket Office Machines. The qualifying AFC project should have been completed within the past 5 (Five) years from the date of submission of the bid submission 2 Projects – 6 Marks 3 projects - 10 Marks		Only Completion certificate duly signed by client will be considered for the criteria.
B.5	Experience of supply of the EMV Certified ETM	Experience of supply installation of L1 & L2, EMV certified ETM machines in AFC Project 2000 - 5000 ETM machines - 4 marks 5001 - 7000 ETM Machines - 6 Marks 7001 - 9000 ETM Machines - 8 Marks Above 9001 - 10 Marks		List of the project with no ETIM supplied.
B.6	Experience of National Common Mobility card (NCMC)	The Bidder should have experience of at least two qualifying AFCS project where in qualifying project bidder should have payment acceptance through NCMC. The qualifying projects should have been commissioned within the past 5 (Five) years from the date of submission of the		Agreement along with Customer certificate to be submitted.

S.N	Parameter	Description	Page Number	Documents Required
		bid and project should be in operations for 12 months. 2 projects - 10 marks. 3 projects - 15 marks		
C	**Solution**			
C.1	Complete & clear understanding of the project & proposed solution architecture including minimum following components but not limited only:	1) Conceptual Design, Hardware & software solution architecture 2) Integration architecture & mechanism 3) Security mechanism & architecture 4) Products & software selection criteria 5) Quality assurance Plan 6) Project Approach & Methodology		Technical Proposal.

Annexure X: Financial capacity of the bidder

Format for CA Certificate

(The format should be certified by Charted Accountant)

Sl. No.	Financial Year	Average Annual Turnover (INR Crores)	Net worth (in INR Crores)
1	2019-20		
2	2020-21		
3	2021-22		
4	**Average**		

Name of Bidder's Bankers:

Address of Bidder's Bankers:

Instructions

1. The Bidder should provide details of its own Financial Capacity specified in the RFP.
2. The Bidder shall attach copies of the balance sheets, financial statements, and Annual Reports for 3 (three) years preceding the Bid Due Date. The financial statements shall:
   a) Reflect the financial situation and turnover of the Bidder.
   b) Be audited by a statutory auditor.
   c) Be complete, including all notes to the financial statements; and
   d) Correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).
3. Net Worth shall mean (Subscribed and Paid-up Equity + Reserves) less (Revaluation reserves + miscellaneous expenditure not written off + reserves not available for distribution to equity shareholders).
4. The Bidder shall also provide the name and address of the Bankers to the Bidder.
5. The Bidder shall provide an Auditor's Certificate specifying the Net Worth of the Bidder and specifying the methodology adopted for calculating such Net Worth in accordance with the RFP document.
6. The Bidder shall also provide an Auditor's certificate specifying the annual turnover of the Bidder Dated this ……day of 2023.

Name of the CA:

Signature of certifying CA

Annexure XI: Relevant Experience

Sr. No.	**Credential for** < *Prequalification Criteria No. / Technical Criteria No*>	
	Name of the Organization - <<*Name of the Bidder / Consortium Member that have executed / executing the project*>>	
	Parameter	**Details**
General Information		
1.	Customer Name	
2.	Name of the contact person and contact details for the client of the assignment	
3.	Whether client visit can be organized	(YES / NO)
Project Details		
4.	Project Title	
5.	Start Date and End Date	
6.	Government/Private/PSU/Others please specify	
7.	Geographical Coverage (No. of locations the project covers)	
8.	Date of Go-Live	
9.	Total Cost of the project	
10.	Current Status (Live / completed / on-going /terminated / suspended)	
11.	Number of years of successful operation	
12.	No of staff provided by your company	
13.	Please indicate the current or the latest AMC period with the client *(From Month –Year to Month-Year)*	
14.	Please indicate whether the client is currently using the implemented solution	
Size of the project		
15.	Order Value of the project (in Crores)	
16.	Capital Expenditure involved (in Crores)	

Sr. No.	**Credential for** < *Prequalification Criteria No. / Technical Criteria No*>		
	Name of the Organization - <<*Name of the Bidder / Consortium Member that have executed / executing the project*>>		
	Parameter	**Details**	
17.	Cost of services provided by the bidder (in Crores)		
18.	Cost of services provided by the partners ifinvolved (in Crores)		
19.	Number of total users and concurrent users of the solution at the client location(s):	Total users	
		Concurrent users	
20.	Training responsibilities of Bidder		
21.	Any other information to be shared with OSRTC		
Narrative Description of the Project:			
Detailed Description of actual services provided by Bidder:			
Documentary Proof:			
Highlights of the Key Result Areas expected and achieved			
List of modules and sub-modules implemented			

Annexure XII: Manufacturers Authorization Form (For Hardware Equipment)

<<To be submitted on the Company Letter head of the OEM>>

Date

To

The General Manager,
Odisha State Road Transport (OSRTC), Bhubaneswar, Odisha

Sub: Authorization of _____ (company name of Bidder) to Provide Services Based on Our Product(s)

Sir,

This is to certify that I/We am/are the Original Equipment Manufacturer in respect of the products listed below. I/We confirm that _____(name of Bidder) have due authorization from us to provide services, to OSRTC, that are based on our product(s) listed below as per Request for Proposal document titled "RFP for selection of SI for ITMS for OSRTC" , We further endorse the warranty and contracting terms provided by bidder to OSRTC.

I/We are the Original Equipment Manufacturer in respect of the products listed. I/We do hereby undertake thatour products being installed by _____(name of Bidder), pursuant to the Request for Proposal (tender) document relating to providing of the Implementation, Information Technology Infrastructure and System Integration services to OSRTC, will be inspected to ensure they are installed, commissioned, and supported to the OSRTC of the operating characteristics of these applications equipment.

I/We also undertake that we will provide support to OSRTC in quality of deliverables and in ensuring that the solution is implemented in the OSRTC of ways by exploiting all the capabilities offered by the solution, to meet therequirements of OSRTC.

I/We also undertake that we will support all the customizations made on our product by the SI to meet the requirements of OSRTC.

S. No.	Product Name	Remarks

Yours faithfully,

(Authorized Signatory)

Designation:

OEM's company name:

CC: Bidder's corporate name

Annexure XIII: Approach and Methodology

The Bidder should cover details of the methodology proposed to be adopted for planning and implementation of solutions and infrastructure relating to establishment of the proposed solution.

- The bidder shall cover the details for best practices from imparting similar kind of training for users in an organization like the purchaser based on bidder's prior implementation experience in the same.
- Detailed Methodology and approach provided for training of the different stakeholders within OSRTC.
- Best practices from undertaking Change Management for users in an organization similar to OSRTC based on bidder's prior implementation experience in the same.
- Detailed Training Plan indicating the number of training sessions, batch sizes and number of batches with respect to all the stakeholders, and all different kinds of training vis-à-vis the requirements in the tender.
- The Bidder may give suggestions on improvement of the scope of work given and may mention the details of any add on services related to this project over and above what is laid down in the tender document. List of deliverables should also be identified and explained.
- The Bidder shall describe the knowledgebase, best practices and tools that will be used by the project team for the execution of scope of work activities based on bidder's prior implementation experience in the same.
- The Bidder should cover details of the methodology proposed to be adopted for operations and maintenance related the proposed solution.
- The Bidder should provide details about of the Service Helpdesk and handholding staff available for the purpose of resolution of issues pertaining to the conditions at the proposed solution.
- Project Methodology should contain but not limited to following.
    - Overall implementation methodology (Objective of phases, deliverables at each phase, etc.)
    - Methodology for performing business design.
    - Methodology for quality control and testing of configured system.
    - Methodology of internal acceptance and review mechanism for deliverables by the bidder.
    - Proposed Acceptance criteria for deliverables.
    - Methodology and approach along with proposed tools and processes which will be followed by thebidder during project implementation.
    - Change Management and Training Plan
    - Spare-part delivery management Plan for hardware components related to the solution.
    - Risk and Quality management plan
- Additional information directly relevant to the scope of services provided in the Volume II of the tender may be submitted to accompany the proposal.
- Overview of support methodology offered in Warranty, AMC/ATS and Support & Maintenance phase.
- Detailed bill of services offered for Warranty, AMC/ATS and Support and Maintenance services.
- Detailed support model for services under support and Maintenance

Annexure XIV: Solution Purposed

S.N.	Solution Area	Name of product / technology	Reference of similar implementation	Implementation carried out by Bidder / OEM / Sub-Contractor*	Salient Features (Approximate Development / Configuration Time, Performance, Scalability etc.)
1					
2					
3					
4					
5					

Annexure XV: List of Key Personnel

S. No	Name of Key Personnel	Area of Expertise	Position/Task assigned for this job.
1.			
2.			
3.			
4.			

Note:

- Names of only the Key Personnel should be mentioned in the table above. If more than one Key Personnel is provided for a particular role, all the names should be mentioned in separate rows.
- The marks for Key Personnel will be computed based on evaluation of Key Personnel only whose CVs are enclosed. If more than one Key Personnel is proposed, the evaluation for the role will be computed based on the proportionate share of the Key Personnel for that role.
- One Key Personnel can be assigned more than one role.

Annexure XVI: Curriculum Vitae of Key Personnel

<table>
<tr><td>1</td><td>Proposed Position</td><td colspan="4"></td></tr>
<tr><td>2</td><td>Name of Staff</td><td colspan="4"></td></tr>
<tr><td>3</td><td>Current Job Title/ Designation</td><td colspan="4"></td></tr>
<tr><td>4</td><td>Date of Birth</td><td colspan="4"></td></tr>
<tr><td>5</td><td>Nationality</td><td colspan="4"></td></tr>
<tr><td>6</td><td>Education</td><td>Sr. No</td><td>Degree Obtained</td><td>Institution</td><td>Dates</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>7</td><td>Certifications</td><td colspan="4"></td></tr>
<tr><td>8</td><td>Employment Record</td><td colspan="4"></td></tr>
<tr><td>9</td><td>Membership of Professional Associations</td><td colspan="4"></td></tr>
<tr><td>10</td><td>Other Training</td><td colspan="4"></td></tr>
<tr><td>11</td><td>Countries of Work Experience</td><td colspan="4"></td></tr>
<tr><td>12</td><td>Languages</td><td>Sr. No</td><td>Language</td><td>Read</td><td>Write</td><td>Speak</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>13</td><td>Detailed Tasks Assigned</td><td colspan="4"></td></tr>
<tr><td>14</td><td colspan="5">Work Undertaken that Best Illustrates Capability to Handle the Tasks Assigned</td></tr>
<tr><td colspan="2">Name of the Assignment/Job or project</td><td colspan="4"></td></tr>
<tr><td colspan="2">Year</td><td colspan="4"></td></tr>
<tr><td colspan="2">Location</td><td colspan="4"></td></tr>
<tr><td colspan="2">Employer</td><td colspan="4"></td></tr>
<tr><td colspan="2">Main Project Features</td><td colspan="4"></td></tr>
</table>

Position Held	
Activities Performed	

Certification:

I, the undersigned, certify that to the best of my knowledge and belief, this CV correctly describes myself, my qualifications, and my experience. I understand that any wilful misstatement described herein may leadto my disqualification or dismissal, if engaged.

Date:
Place:

Annexure XVII: Staffing Schedule for Operations Phase

S.N.	Category	Role	No. of persons proposed to be deployed							Total man-months
			1	2	3	4	5	6	n	

Note:

- SI should specify the approximate number of personnel for software development during implementation phase.
- SI should specify the number of persons proposed to be deployed in the operations phase based on the following categories as specified in technical evaluation criteria.

Annexure XVIII: Work Schedule

A work schedule plan covering break-up of each phase into the key activities, along with the start and end dates should be provided as per format given below.

S. No	Activity	Duration (Indicate start and end)												
		1	2	3	4	5	6	7	8	9	10	11	12	N

Note: The above activity chart is for the purpose of illustration. Bidders are requested to provide detailed activityand phase wise timelines for executing the project with details of deliverables.

Annexure XIX: Undertaking – Arrangement with OEMs for Technical Support

Date:

To

The General Manager,
Odisha State Road Transport (OSRTC), Bhubaneswar, Odisha

Sub: Arrangement with OEMs for implementation and operations for Integrated Transport Management System (ITMS)

We, the undersigned, having read and examined the requirements of the project, have licensed all products that would complement the solution in the best possible way and that all the business and functional requirements would be fulfilled either by the product or through customizations. We have/will enter(ed) into requisite arrangements with the OEMs for the following:

- **Professional Services and Technical Support**

  We confirm that we have chosen the products from OEMs who have professional support services in India (or through their authorized channel partners). These professionals will be made available as and when required forsupporting all technical aspects of project implementation, solution maintenance and support during entire periodof Project including extended period if any as stated in RFP. This does not include web support or remote support.

- **Vetting of solution**

  We confirm that OEM's support would be taken for vetting of the technical solution as proposed andimplemented.

  We confirm that OEM's support would be taken to ensure that the end-to-end solution works seamlessly acrossproducts and that the integration is covered under our agreements with all the OEMs involved.

It is hereby confirmed that I/We are entitled to act on behalf of our company and empowered to sign thisdocument as well as such other documents, which may be required in this connection.

(Signature of the Authorized signatory of the Bidder)

Name:

Designation:

Seal:

Date:

Place:

Business Address:

Summary of Arrangement with OEMs for implementation and operations support

S. N.	OEM Name & Registered office	Product	Arrangement for Technical Support

Annexure XX: Compliance to Functional Requirements

Compliance against the following requirements is expected to be provided in the technical response bid in the following format.

S.N.	Description of Requirement	Compliance (Yes/No)	Compliance type (STD / CUS / DEV)	Product Name with version	Sub-module (if applicable)
1					

Where:	
Sr. No.	Requirements no.
Description of requirement	As provided in the document below
Compliance (Yes/No)	Please enter "Yes" or "No" only. No other value should be entered
Compliance type (STD / CUS / DEV)	Only following three values shall be accepted here. STD: Functionality can be provided by the proposed solution out of the box CUS: Functionality can be provided by customization to the proposed solution, includes use of third-party solution for installation. DEV: Functionality will be developed
Product Name withversion	Please mention the product name with version which will be used to providethe functionality
Module	Please mention the specific module within the product which will be to provide the functionality
Sub-module (if applicable)	Please mention the specific sub-module (if applicable) within the product which will be to provide the functionality

Annexure XXI: Performance Bank Guarantee Format

To

The General Manager,
Odisha State Road Transport (OSRTC),
Bhubaneswar, Odisha

Whereas <<name of the SI and address>> (hereinafter called “the Bidder”) has undertaken, in pursuance of contract no. <Insert Contract No.> dated. <Date> to provide Implementation services for “Integrated Transport Management System (ITMS)” to OSRTC (hereinafter called “the beneficiary”).

And whereas it has been stipulated in the said contract that SI shall furnish you with a bank guarantee by a recognized bank for the sum specified therein as security for compliance with its obligations in accordance with the contract.

And whereas we, <Name of Bank> a banking company incorporated and having its head /registered office at

<Address of Registered Office> and having one of its offices at <Address of Local Office> have agreed to give the SI such a bank guarantee.

Now, therefore, we hereby affirm that we are guarantors and responsible to you, on behalf of the SI, up to a total of Rs. <Insert Value> (Rupees <Insert Value in Words> only) and we undertake to, upon your first written demand declaring the SI to be in default under the contract and without cavil or argument, any sum or sums within the limits of Rs. <Insert Val e> (Rupees <Insert Value in Words> only) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from SI before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the SI shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition, or modification.

This Guarantee shall be valid until <<Insert Date>>

Notwithstanding anything contained herein:

Our liability under this bank guarantee shall not exceed Rs. <Insert Value> (Rupees <Insert Value in Words> only).

This bank guarantee shall be valid up to <Insert Expiry Date>

It is condition of our liability for payment of the guaranteed amount or any part thereof arising under this bank guarantee that we receive a valid written claim or demand for payment under this bank guarantee on or before <Insert Expiry Date> failing which our liability under the guarantee will automatically cease.

"This Bank Guarantee issued by Bank, on behalf of SI in favor of OSRTC is in respect of a new Contract dated. As communicated by SI on the date of execution of this Bank Guarantee an amount of Rupees__(Rupees only) is outstanding and payable to SI, in respect of pervious contracts between SI and OSRTC.

Annexure XXII: Commercial bid submission letter

<<On Bidder / Lead Bidder Letterhead>>

Date:

To

The General Manager,
Odisha State Road Transport (OSRTC),
Bhubaneswar, Odisha

Sir,

Subject: Response to Request for Proposal (RFP) for "Selection of System Integrator (SI) for Integrated Transport Management System (ITMS) for OSRTC"

Reference:

We, the undersigned Bidders, having read and examined in detail all sections of the RFP document in respect of "**Selection of System Integrator (SI) for Integrated Transport Management System (ITMS) for OSRTC"**, do hereby propose to provide the solutions and services as specified in the Tender document.

Price and Validity

All the prices mentioned in our proposal are in accordance with the terms specified in the Tender documents.All the prices and other terms and conditions of this proposal are valid for a period of 180 calendar days from the date of submission of the Proposal.

Taxes

We hereby confirm that our proposal prices include all taxes existing as on the date of submission. We have studied the clause relating to Indian Tax and hereby declare that if any income tax, surcharge on Income Tax, Professional and any other Corporate Tax in altercated under the law, we shall pay the same. However, any variation in tax apart from income tax and GST will be reimbursed by the OSRTC based on actual prevailing rates as on the date of invoice.

Tender Pricing

We further confirm that the prices stated in our proposal are in accordance with all requirements, instruction, terms and conditions and procedures included in RFP documents.

Qualifying Data

We confirm having submitted the information as required by you in your Instruction to Bidders. In case you require any other further information / documentary proof in this regard before evaluation of our Bid, we agree to furnish the same in time to your satisfaction.

Proposal Price

We declare that our proposal Price is for the entire scope of the work as specified in the Schedule of requirements and Tender documents. The price quoted will remain firm during the contract period.

We hereby declare that our Proposal is made in good faith, without collusion or fraud and the information contained in the Proposal is true and correct to the OSRTC of our knowledge and belief.

We understand that our Proposal is binding on us during the validity period or the extensions thereof andthat you are not bound to accept a Proposal you receive.

We confirm that no deviations are attached here with this commercial offer.

Thanking You,

Yours faithfully,

(Signature of the Bidder / Authorized signatory)

Name

Designation

Seal

Date:

Place:

Business Address

Commercial bid and priced bill of material

Summary

A. Hardware Components

S.N.	Component Category	Unit Price	Quantity	Total Price	Price during Operations and Maintenance			Total O&M price	Total Amount exclusive of taxes, levies duties, etc.	Total Amount in Words
					Year 1	Year 2	Year 3			
				A	I	II	III	B = (I+II+III)	C = A + B	C
1.	LED with metal frame at Bus Stop as per technical specifications		155							
2.	PIS at Bus terminus		25							
3.	Bus Terminal UPS 3 KVA, UPS with 4 hours of backup at Bus Terminal to operate POS		23							
4.	Depot workstations as per specification mentioned in the RFP with inbuilt OS		23							
5.	GPS Devices (AIS-140)		500							
6.	Control Centre Hardware including 3X3 video wall, Networking equipment's, etc.		1							
7.	CCTV with NVR		420							
8.	PIS for Pre BS-6 buses		840							

S.N.	Component Category	Unit Price	Quantity	Total Price	Price during Operations and Maintenance			Total O&M price	Total Amount exclusive of taxes, levies duties, etc.	Total Amount in Words
					Year 1	Year 2	Year 3			
				A	I	II	III	B = (I+II+III)	C = A + B	C
9.	HQ & CCC workstations as per mentioned in the RFP with inbuilt OS		20							
10.	Printer		2							
11.	Network Switches		2							
12.	UPS		2							
13.	Commissioning & Networking		1							
14.	Router		2							
15.	Firewall cum IPS/IDS		2							
16.	42U Rack		1							
17.	Video Wall		1							
18.	Cabling (UTP CAT6)		as per actuals							
19.	ETIM Machine		600							
20.	SAM Module		600							
21.	SIM for ETIMs		600							
22.	ETIM charging station		30							
Hardware component Total										

B. Software Component

S.N.	Component Category	Unit Price	Quantity	Total Price	Price during Operations and Maintenance			Total O&M price	Total Amount exclusive of taxes, levies duties, etc.	Total Amount in Words
					Year 1	Year 2	Year 3			
				A	I	II	III	B = (I+II+III)	C = A + B	C
1	Financial Management System		1							
2	Inventory Management Software		1							
3	Incident/Grievance Management/Help Desk Software		1							
4	Bus crew Scheduling and Dispatch Management Software		1							
5	Depot Management System		1							
6	Business Intelligence Software (5 Users)		1							
7	Enterprise Management System		1							
8	Commuter Mobile Application (Android and iOS)		1							
9	Software for Control Centre, Networking equipment's System		1							

S.N.	Component Category	Unit Price	Quantity	Total Price	Price during Operations and Maintenance			Total O&M price	Total Amount exclusive of taxes, levies duties, etc.	Total Amount in Words
					Year 1	Year 2	Year 3			
				A	I	II	III	B = (I+II+III)	C = A + B	C
	Software – License Fee									
	a) Operating System									
	b) Database System									
	c) Application Server Platform									
	d)Third party Software / plug in / development Tools									
10	Human Resource Management System (HRMS) Software		1							
11	Passenger Counting Solution for OSRTC Fleet		1							
12	Automated Fare Collection System (AFCS)		1							
Software component Total										

C. Cloud hosting and connectivity Component

S.N.	Component Category	Unit Price/Month	Quantity	Months	Total Amount exclusive of taxes, levies duties, etc.	Total Amount in Words
1	Cloud hosting		1	36		
2	Connectivity		1	36		
Cloud hosting and connectivity component Total						

D. Project Resource Component*: Technical Resources (Development and Implementation Phase)

S.N.	Component Category	Quantity	Man-month Rate	Total Amount in Words
1	Program Manager	1		
2	Team Leader	1		
3	Solution Architect	1		
4	UI Designer	1		
5	Developers (3-5 years' Experience)	1		
6	Quality Expert	1		
7	Mobile Application Developers (3-5 years' Experience)	1		
8	Database Admin (5+ Years' Experience)	1		
9	Security Expert	1		
10	Systems Admin	1		
11	Tester (3-5 years' Experience)	1		
12	Helpdesk Services	1		

Note: *The manpower cost sheet is only for reference; it shall not be added to the Cost Summary Sheet (E)*

E. Cost Summary

S.N.	Component Category	Total Price	Total price during Operations and Maintenance			Total O&M price	Total Amount exclusive of taxes, levies duties, etc.	Total Amount in Words
			Year 1	Year 2	Year 3			
		A	I	II	III	B = (I+II+III)	C = A + B	C
1	**Hardware (A)**							
2	**Software (B)**							
3	**DC Hosting and connectivity (C)**	Not Applicable						
Grand Total								

Authorised signatory on behalf of the bidder:

Full name: …

Address: …

Seal of the Firm:

Odisha State Road Transport Corporation
(OSRTC)

Request For Proposal (RFP)

For

Selection of System Integrator for Integrated Transport Management System (ITMS)

Volume-II: Terms of Reference

Disclaimer

1. This Request for Proposal ("tender") is issued by Odisha State Road Transport Corporation (OSRTC).
2. The information contained in this Request for Proposal document (“tender”) or subsequently provided to Bidders, whether verbally or in documentary or any other form by or on behalf of the Odisha State Road Transport Corporation (OSRTC) (the Purchaser) or any of its employees or advisors, is provided to Bidders, on the terms and conditions set out in this tender.
3. This tender is not a Contract and is not an offer by the Purchaser to the prospective Bidders or any other person. The purpose of this tender is to provide interested parties with information that may be useful to them in the formulation of their Proposals in pursuant to this tender. This tender includes statements, which reflect various assumptions and assessments arrived at by the Purchaser, in relation to the project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This tender may not be appropriate for all persons, and it is not possible for the Purchaser, its employees, or advisers to consider the objectives, technical expertise, and particular needs of each party, who reads or uses this tender. The assumptions, assessments, statements, and information contained in this tender, may not be complete, accurate, adequate, or correct. Each Bidder should, therefore, conduct his own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments and information contained in this tender and obtain independent advice from appropriate sources.
4. Information provided in this tender to the Bidders 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 Purchaser accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on the law expressed herein. The Purchaser, its employees and advisers make no representation or warrants and shall have no liability to any person including any 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 tender or otherwise, including the accuracy, adequacy, correctness, reliability or completeness of the tender and any assessment, assumption, statement or information contained therein or deemed to form part of this tender or arising in any way in this selection process.
5. The Purchaser also accepts no liability of any nature, whether resulting from negligence or otherwise, however caused, arising from reliance of any applicant upon the statements contained in this tender.
6. The Purchaser may, in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this tender. The issue of this tender does not imply that the Purchaser is bound to select a Bidder or to appoint the Selected Bidder for this project and the Purchaser reserves the right to reject all or any of the proposals, without assigning any reason whatsoever.
7. OSRTC or its authorized officers / representatives / advisors reserve the right, without prior notice, to change the procedure for the selection of the Successful Bidder or terminate discussions and the delivery of information at any time before the signing of any agreement for the Project, without assigning reasons thereof.
8. The tender Document does not address concerns relating to diverse investment objectives, financial situation, and particular needs of each party. The tender Document is not intended to

provide the basis for any investment decision and each Bidder must make its / their own independent assessment in respect of various aspects of the techno-economic feasibilities of the Project. No person has been authorized by OSRTC to give any information or to make any representation not contained in the tender Document.

9. The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Proposal including but not limited to preparation and expenses associated with any demonstrations or presentations which may be required by the Purchaser, or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses shall remain with the Bidder and the Purchaser shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder, in preparation for submission of the Proposal, regardless of the conduct or outcome of the selection process.

Contents

Glossary

Terms	Meaning
OSRTC	Odisha State Road Transport Corporation
CCTV	Closed Circuit Television
GIS	Geographical Information Systems
GPS	Global Positioning System
ICT	Information and Communication Technology
SI	System Integrator
SOP	Standard Operating Procedures
UAT	User Acceptance Testing
VM	Virtual Machine
CCC	Command & Control Centre
ITMS	Integrated Transport Management System
DC	Data Centre
IT	Information Technology
OFC	Optical Fiber Cable
PoP	Point of Presence
FMS	Facility Management Services
UPS	Uninterrupted Power Supply
VMS	Variable Message Sign

1. Introduction

1.1. Project Background

Odisha State Road Transport Corporation (OSRTC) aspires to create a sustainable and efficient public transport infrastructure for the State of Odisha. It plans to boost inter and intra State bus service to meet the short term and long-term transport needs.

Public transport should always be the hall mark of a good transportation system of any region as the role of public transport is vital for economic growth. Building intelligence into the transport system brings in the convergence of technologies providing a synergetic transformation in the commuter experience.

ITMS technology framework includes wireless communication, sensing technologies, inductive loop detection, video vehicle detection and electronic toll collection. The possibilities are enormous, with OSRTC proposing to lay the foundation by implementing Integrated Transport Management System (ITMS) to provide an electronic Ticketing System which enables Automatic fare Collection, a Digital Payment System Complying to National Common Mobility Card (NCMC) guidelines dynamic information of the bus routes, ETA/ETD, improve efficiency and productivity in transport management an effort is being made to attract more passengers and maintain the existing customer base and lower the pollution levels. Under the 5T initiative of the State, ITMS shall provide benefits in terms of instant and immediate ticketing with ETIM, accurate and instate reconciliation of the business, exact status of the number of travelers and ticket issued in the bus, reduced waiting time and uncertainty, increased accessibility of the system and real time information, increased safety of users, reduced fuel consumption and emissions, reduced operational costs, improved efficiency, and finally improved economic productivity.

The proposed projects' implementation will include core components such as AFC system complying with the new Open-loop initiative of the GoI, Online reservation System at the counter, Public Online reservation System for the public, OSRTC Transit cards (OTCs) enablement for the mode of payment in the bus, Vehicle Tracking System, Real Time Passenger Information System, Central Control Station. Core technologies include Geographical Positioning System (GPS), Electronic Display Systems and Information & Communication Technologies.

1.2. Project Objectives

OSRTC requires an ITMS solution for the below mentioned key areas:

Objective: 1 – Automatic Fare Collection System (AFCS)

Objective of AFCS is to have a digital platform which can help in issuing the tickets electronically, book the ticket electronically and also have the digital payment system to collect the fare.

I. Supply, install, and configure Electronic Ticket issuance Machines (ETIMs) for issuing the ticket electronically.

II. Deploy the Online reservation (ORS) system to book the tickets online.

III. Deploy the Public Online Reservation System (PORS) for public to book the ticket in advance from anywhere.

IV. Deploy the Back office for reconciliation and reporting of the business.

V. Configure ETIMs to read and accept the Payment through the OSRTC Transit Cards (OTCs) issued by banks.

VI. Integrate the Ticketing system with Banking system to accept the payment through the OTCs issued by any bank.

Objective: 2 – Automatic Vehicle Locating System (AVLS)

i. Provide some intelligent MIS reports to manage the overall system and reduces chances of unauthorized and fraud activity.

ii. Provide optimized solution for Fleet Monitoring, Vehicle Route Scheduling, Automatic Data Capture and Storage, Retrieval of Vehicle Status Information, Monitoring and Control of entire fleet operation and two-way communications between Control Room and Bus Driver.

Objective: 3 – Transit Management System

i. Dynamic routing and scheduling of vehicles

ii. Facilitate Real time Transport Operations

Objective: 4 – Incident Management System

i. Efficient and coordinated management of incidents reduces their adverse impact on public safety, traffic conditions and the local economy.

ii. Reduced vehicle delays and enhanced safety to motorists through reduction of incident frequency and improved response and clearance times.

Objective: 5 – Passenger Information System

i. Facilitate Commuter by providing updates of Expected Arrival and Departure time of buses at Bus Terminals and On-route Bus Stops.

ii. Display Real time information of routes and estimated time of arrival bus.

iii. Automatic internal voice and visual announcements of next stop locations

iv. Automatic external voice announcements of route name, direction and destination

Objective: 6 – Web Portal

Plan a transit trip, check where a route goes, get information about a transit provider.

If passengers are not familiar with where they want to go, interactive maps can help find their destinations.

Objective: 7 – Bus Terminal Management System

A bus terminal is a designated place where a bus starts or ends its scheduled route and picks and drops passengers. Bus Terminal Management shall receive data from the bus devices and transmit the same to the Command-and-Control Centre (CCC).

A command-and-control center (CCC) in OSRTC refers to a secure room that operates as the surveillance monitoring center, coordination office and alarm monitoring center all in one. The CCC is the “nerve center” - a central administrative location from where overall assets and activities are monitored and managed.

CCC has an objective to implement holistic and integrated video surveillance system which includes Command and Control center, Video Management Software and Video Analytics for the seven cities of the state of Rajasthan. This system shall also integrate with surveillance systems of different stakeholders with the objective of enhancing safety and security in the buses. The system shall help-

- To aid citizen at the time of emergency
- To provide facilities of Ambulance, Police Van, Fire Brigade to the citizens
- To effectively manage Road Traffic
- To make use of technology for traffic challan
- Support police to maintain Law and Order
- To help in investigation of crime
- Help in preventing, detecting, and dealing with criminal activities with minimum TAT.
- Provide alerts and video analytics for counter terrorism.
- Monitoring of suspicious people, vehicles, objects etc. with respect to protecting life and property and maintaining law and order in the city
- Continuous monitoring of some important locations/ public places in city area like area near to railway station, airport, and other public places for keeping eye on regular activities & for emergency support

The Proposed video surveillance system will enable the above by using VMS and Video analytics. This system will provide.

- Alerts/ feedback to the Police Department about abnormal movements/ suspicious objects.
- Better Management of Security breaches based on alerts received from system.

Improved turnaround time in responding to any investigation case, faster access to evidence in case of security breach, law violation in the prescribed areas.

Objective: 8 – Dashboard based Management Information System

Management Information System is a single window dashboard for higher management. The dashboard is designed considering typical requirement of Decision Support Tool for Higher Management. It can be used as navigation to various reports and other functionalities as well.

The dashboard may be used as one of the best tools available to authorities of Public Transit System for various comparison and Decision Analysis.

Objective: 9 - Inventory and Maintenance Management System

i. Stock keeping at depot.

ii. Inventory Transaction Recording and Reports preparation

iii. Automatic Maintenance Scheduling and Schedule Adherence

Objective: 10 - Business Intelligence System

BI platform to enable OSRTC to build reports from operations data to perform multidimensional analysis.

Objective: 11 – Human Resource Management System

HR software to enable the management of several HR functions using information technology.

Objective: 12 – Depot Management System

Depot Management system shall automate Depot Operations by providing Vehicle Management, Services Management, Integrated depot management and stores and inventory management. Depot management system shall manage the information related to various Service providers, shift patterns, Location and Stops details etc.

1.3. Purpose of this RFP

Main objective of this project is to create a sustainable and efficient public transport infrastructure for the State of Odisha. Under the 5T initiative of the State, ITMS shall provide benefits in terms of efficient & automatic fare collection and monitoring, enablement of digital payment system, issuance of co-branded OSRTC Transit Cards (OTCs) to the commuter, reduced waiting time and uncertainty, increased accessibility of the system and real time information, increased safety of passengers, reduced operational costs, improved efficiency, and finally improved economic productivity.

This document talks about current state, key issues and solutions which are going to be covered in the RFP for Integrated Transport Management System for Odisha state road transport corporation, in accordance with the guidelines laid out.

2. Project Overview and Components

Key foundation components for ITMS considered for this RFP are:

- Automated Fare Collection System (AFCS) & Backoffice
- Supply and configure L1 & L2 certified Electronic Ticketing Issuing Machines (ETIMS)
- Co-branded OTC issuance & acquisition
- Cloud setup
- Automated Vehicle Locating System (AVLS)
- Vehicle Scheduling & Dispatching System
- Passenger Information System (PIS)
- Financial Management System
- Depot Management System
- Incident Management System
- Data Computing services through State data center
- Human Resource Management System
- Business Intelligence System

The SI shall be completely responsible for integration, initialization and start-up of the equipment supplied. Service Provider would also be responsible for integration of any other devices and equipment supplied by any other vendor that is part of the existing ITMS. Thereafter, the complete responsibility of operations and maintenance of the ITMS system, including spares and insurance shall lie with the ITMS Service Provider for the Contract Period.

2.1. Components and scope overview

The selected SI shall ensure the successful implementation of the proposed solutions as well as provide capacity building support to city authorities as per the scope of services described below. Any functionality not expressly stated in this document but required to meet the needs of the OSRTC to ensure successful operations of the system shall essentially be under the scope of SI and for that no extra charges shall be admissible. SI shall implement and deliver the systems and components which are described in this RFP. Details of each of these broad areas have also been outlined in Annexures.

2.2. Project Timelines

S.No	Milestone	Deliverables	Timelines (in months)
1	**Phase-I**	Implementation of ITMS **(T1)**	12 months
2	**Phase-II**	Operation and Management Phase	T1+36 months

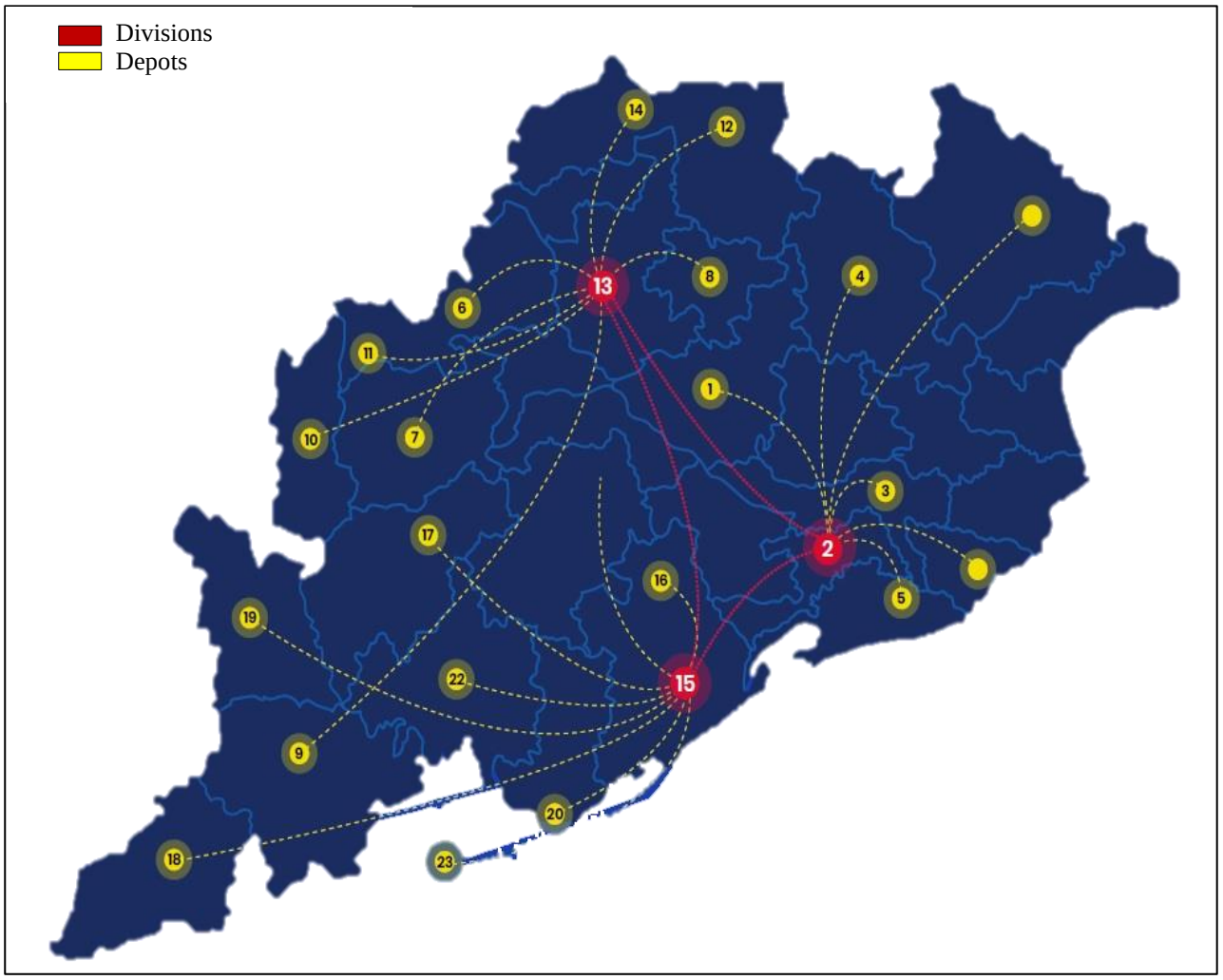
2.3. ITMS Overview

ITMS for OSRTC shall comprise of following distinct application areas: ("ITMS Project")

Sr. No	Application	Product
1.	Automatic Fare Collection System (AFCS)	AFCS & Backoffice
2.	Supply, Installation, Testing & commissioning of ETIM	AFCS & Backoffice
3.	Supply, Installation, Testing & commissioning of ETIM Charging Units	AFCS & Backoffice
4.	Supply, Installation, Testing & commissioning of HHT application	AFCS & Backoffice
5.	Supply, Installation, Testing & commissioning of L3 Application	AFCS & Backoffice
6.	Supply, Installation, Testing & commissioning of Back office	AFCS & Backoffice
7.	Automated Vehicle Location System	Central AVLS
8.	Integrated Single Control Unit	SCU
9.	Vehicle Scheduling, Planning & Dispatch	Central VS&DS
10	Depot Management System	DMS
11	Passenger Information System	Central PIS
12	LED based Passenger Information System Displays	LED based Bus PIS
13	LED based Bus Shelter Passenger Information Display	LED PIS Display
14	Mobile App (Android, iOS, Windows) for Citizens, Officials & Bus Crew Member	Mobile App
15	Website for Transit	Website
16	Passenger Counting System	Central PCS
17	Transit Security & Surveillance System	Central VMS System
18	IP CCTV Camera network on BUS	IP CCTV
19	Central Control Centre	CCC
20	Data Centre	Central DC
21	Disaster Recovery Centre	Central DRC
22	Enterprise Management System	EMS
23	Transit Business Intelligence Management System	BI
24	OSRTC Transit Cards (OTC) Issuance and Acquiring Services through Financial Institute	

The figure below is indicative and includes the activities that would need to be carried out as part of implementation of ITMS. Detailed scope is mentioned in the document below.

2.4. Route Map



Route List	Divisions		
	Bhubaneswar Division	Sambalpur Division	Berhampur Division
Depots	Angul	Baragarh	Berhampur
	Bhubaneswar	Bolangir	Bhanjanagar
	Cuttack	Deogarh	Bhawanipatna
	Keonjhar	Jeypore	Malkangiri
	Malatipatpur	Nuapada	Nabarangpur
		Padampur	Paralakhemundi
		Rourkela	Phulbani
		Sambalpur	Rayagada
		Sundargarh	Vizianagaram

Existing status of Depots

Sr. No.	Parameters	Status as of March 2022
1	Average Schedule Operated	190
2	Number of Vehicles used per day	596
3	Effective Km/month (in Lakh)	234.9 lakhs
4	Traffic Receipt/ month (in Lakh)	367.82 lakhs
5	Traffic Receipt including value of Concession/ month (in Lakh)	584.46 lakhs
6	Earning/Km. (E.P.K.M.)	41.4 Rs/km
7	E.P.K.M. including value of Concession	57.25 Rs/km
8	Load Factor (occupancy ratio – in percent)	78.8
9	Load Factor including value of Concession	77.93
10	Staff Ratio per on Road Vehicle	7.68
11	Crew Duty	140 km/day
12	Vehicle Utilization in Kms	282.7 kms/day
13	Fleet Utilization	96.71%
14	Break Down (B/D) Rate per 10,000 Km	0.14
15	Fuel Average) - HSD	4.31 Km/Ltr
16	Cost per Km	66.84 Rs/km
17	Margin (including value of concession)	-8.8 Rs/km

2.5. OSRTC owned depots and terminals.

S.N.	Depot	Total Routes Allotted	Total Routes Operated	Total Buses
1	Angul	9	6	22
2	Baragarh	11	7	28
3	Berhampur	12	12	40
4	Bhanjanagar	9	6	17
5	Bhawanipatna	13	11	33
6	Bhubaneswar	30	19	82
7	Bolangir	8	6	24
8	Cuttack	23	9	63
9	Deogarh	3	3	5
10	Jeypore	27	22	59
11	Keonjhar	10	5	22
12	Malkangiri	12	9	13

S.N.	Depot	Total Routes Allotted	Total Routes Operated	Total Buses
13	Malatipatpur	6	6	17
14	Nabarangpur	8	7	9
15	Nuapada	7	5	9
16	Padampur	7	6	14
17	Paralakhemundi	4	3	6
18	Phulbani	13	9	21
19	Rayagada	10	5	11
20	Rourkela	9	8	21
21	Sambalpur	15	9	40
22	Sundargarh	6	5	9
23	Vizianagaram	15	12	31
Total		**267**	**190**	**596**

3. Scope of work

OSRTC intends to implement the Intelligent Transportation Management System (ITMS) comprising Design, Development, Implementation, Operation and Maintenance of the Intelligent Transportation Management System (ITMS) for OSRTC Buses in state area of Operations.

The ITMS shall comprise, inter alia, Automated Fair Collection System (AFCS) & Backoffice, Supply and configure L1 & L2 certified Electronic Ticketing Issuing Machines (ETIMS), Co-branded OTC issuance & acquisition, Cloud setup, Automated Vehicle Locating System (AVLS), Vehicle Scheduling & Dispatching System, Passenger Information System (PIS), Financial Management System, Depot Management System, Incident Management System, Data Computing services through State data centre and any other components specified in this RFP.

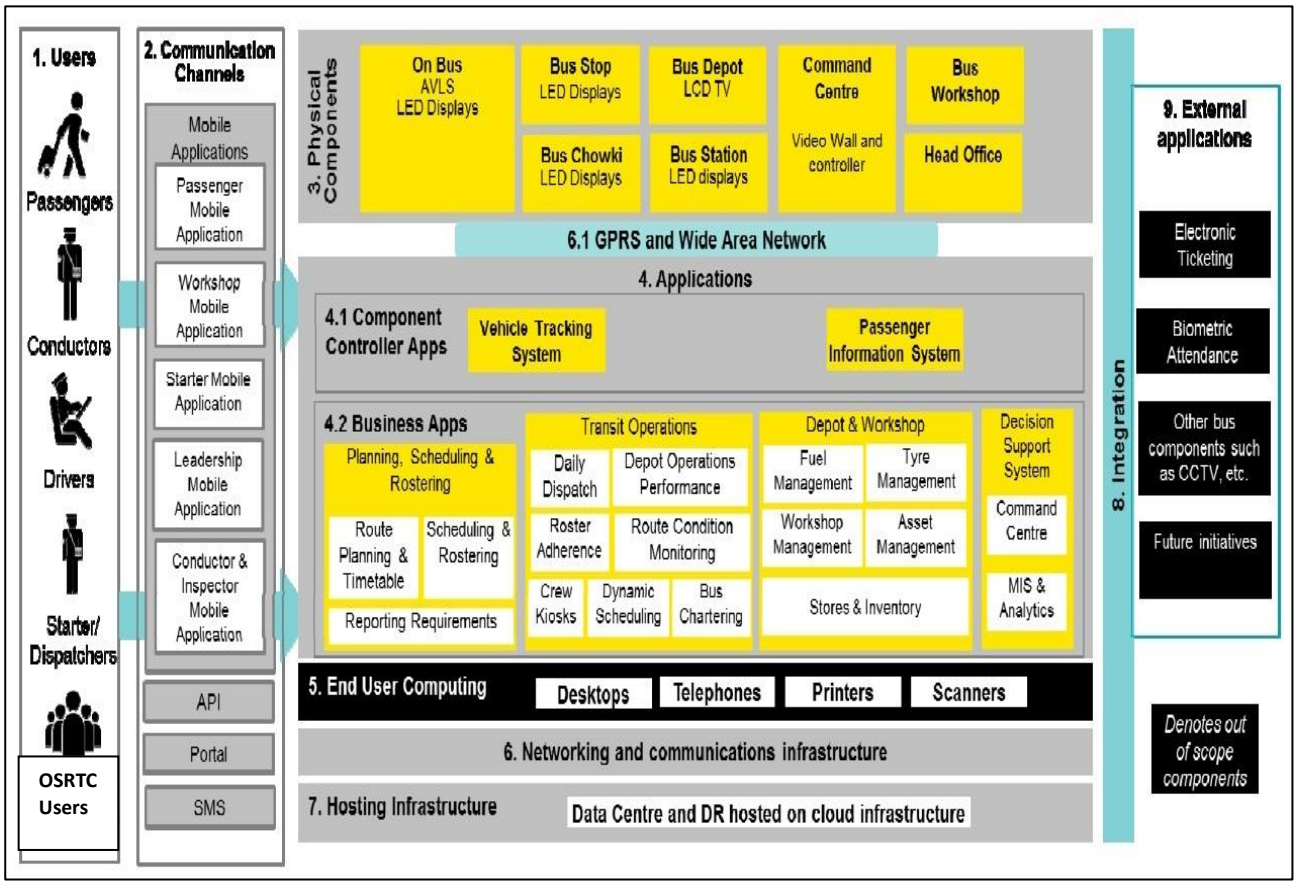
The Service Provider shall be completely responsible for integration, initialization and start-up of the equipment supplied. Service Provider would also be responsible for integration of any other devices and equipment supplied by any other vendor that is part of the existing ITMS. The System integrator shall be responsible for integration of buses on lease and rental basis. Thereafter, the complete responsibility of operations and maintenance of the ITMS system, including spares and insurance shall lie with the ITMS Service Provider for the Contract Period.

The ITMS Project is to be implemented for entire fleet of OSRTC and the details of proposed vehicles operating under state bus services are as under:

- Total Buses: 638 Buses (Scalable up to 2000 buses)
- Total Bus Terminal: 120+

- Total Depot: 23 (19+4)
- Total Bus Stand: 7

3.1. ITMS Architecture



3.2. Overview of scope of work

Sr. No.	Particulars	Description
A	**Hardware Components**	
1.	Electronic Ticket Issuing Machine (ETIM)	Supply, installation, and configuration of ETIM devices along with covers in OSRTC depots / bus stands as instructed by OSRTC
2.	ETIM Charging station	Supply, installation, and configuration of ETIM charging stations along with sufficient sockets in OSRTC depots / bus stands as instructed by OSRTC
3.	Cloud Setup	Supply cloud-based infrastructure for hosting the application
4.	SAM	Supply install & configure the required Security Access Module (SAM)
5.	PIS LED Displays	Supply, installation, and configuration of PIS LED Displays in OSRTC depots / bus stands as instructed by OSRTC
6.	Depot Desktops	Supply, installation, and configuration of Depot Desktops at OSRTC Depots

Sr. No.	Particulars	Description
7.	OSRTC Central Command Centre Infrastructure	Setup Central Command center at the location specified by the Authority, successful bidder can suggest the location to host the CCC.
8.	Proximity Sensors/Camera/Sensors (Inside Bus)	Supply, Installation and Configuration in buses for Passenger Counting System
9.	NVR	Supply installation and configure of Network Video Recorder in Buses.
10.	VTS	Installation of Vehicle Tracking Devices (VTS) in buses (wherever it is not available) and configure to get the GPS location of the Buses
B		**Software Components**
1.	AFC system with Back office	Development, deployment, customization of Automatic Fare collection system (AFCS) along with the Back office for producing different Business reports
2.	ETIM Application	Development of application in ETIM handheld terminal with different routes and respective business rules to issue paper tickets. It is also to be configured to read and accept payments through the OSRTC Transit Card (OTC) , a Mobility Card issued by different banks as payment media. This will also be configured to securely assign the device to respective conductor at the beginning of the duty and also back to respective depot after closing the duty of the conductor.
3.	Online Reservation System(ORS)	Development, deployment, customization of Online reservation system to do the advance booking form the ticket window at different Depots. This will also have secure module which will be used by respective ticket window operator to login to the system to book the tickets
4.	Public Online Reservation System(PORS)	Development, deployment, customization of Public Online reservation system to do the advance booking form anywhere by the public. This will have Payment Gateway configured to pay the ticket booking amount
5.	Automatic Vehicle Locating System (AVLS)	Development / customization, testing, installation, and commissioning of Automatic Vehicle Locating System to display real time location of vehicles and comprising of following systems. • Financial Management System • Inventory Management Software • Scheduling and Dispatch Management Software • Incident Management System • Business Intelligence Software • Enterprise Management System
6.	Common Data Centre	Database, Servers, Security setup, Backup System, Anti-Virus setup etc. for Database

Sr. No.	Particulars	Description
7.	PIS Mobile App	Development / customization, testing, and commissioning of Passenger information system to display bus schedule information, route information, estimated time of arrival and departure.
8.	PIS LED Display	Development / customization, testing, and commissioning of Passenger information system to display bus schedule information, route information, estimated time of arrival and departure on LED TV displays to be installed at OSRTC Bus Depots / Bus Stands. Count required may be increased or decreased as per the requirement.
9.	Passenger Counting System	Development / customization, testing, and commissioning of Passenger Counting system to monitor route/bus/unit wise passenger count.
10.	PIS Management Module	Development / customization, testing, and commissioning PIS Management Module to manage any notifications / content to be displayed on PIS app and LED Display and configure various parameters associated with PIS.
11.	Human Resource Management System	Development / customization, testing, installation, and commissioning of Human Resource Management System (HRMS)
C	**Other Components**	
1	Annual Maintenance Contract	Annual Maintenance Contract for all hardware and software components during contract period i.e., 3 years **(extendable up to additional 2 years)** post Go-Live
2	Disaster Recovery Centre	Setup, operate and maintain Disaster Recovery Centre (DRC) for continuity of the Project in case of any stoppages of failure as per the scope, Technical Specifications and Functionalities specified in the DPR
3	Hosting	Setup, configuration, end-to-end management of Cloud hosting required for smooth running of system
4	Internet	Successful bidder shall be responsible for providing SIM cards and internet connectivity for smooth functioning of VTS and PIS LED Displays at each vehicle and Depot installation
5	Manpower Support	Successful bidder shall provide resources to provide Manpower support at OSRTC central command center
6	Training and Handholding	Successful bidder shall provide training to OSRTC employees & bus crew as informed by OSRTC

3.3. Technical Architecture and Requirement

Some of the salient features of the solution architecture and technology choices are as follows: -

Web Application:

- Component-based architecture to enable extensibility of features and functions will be used.
- Web services will be used for communication between modules and external systems.

- Single-sign-on will be enabled to enable access to the application modules with a single access credential.
- Role based Authorization is provided for logged in users. Only authorized users can access the respective functionality.
- Workflow based application.

Technical Architecture:

- The application will be open, inter-operable, highly scalable, and capable of delivering high-performance in varied field conditions.
- Component-based architecture to enable extensibility of features and functions.
- Framework choice is based on various factors including scalability, easy to upgrade etc.
- Audit trail will be maintained to keep track of changes done by users.

3.4. Project Coverage

3.4.1. Geographical Coverage

The ITMS system will cover the entire state and will include multiple Bus stop, Bus terminal, Bus Depot across the state.

Project Site/ Work Site: Bus Stops, Bus Terminals, Buses, Bus Depots and Central Control Centre at OSRTC area of Operation, Odisha.

The System Architecture should be modular enough to augment its capacity to even higher number of locations and storage requirements, if needed, in future.

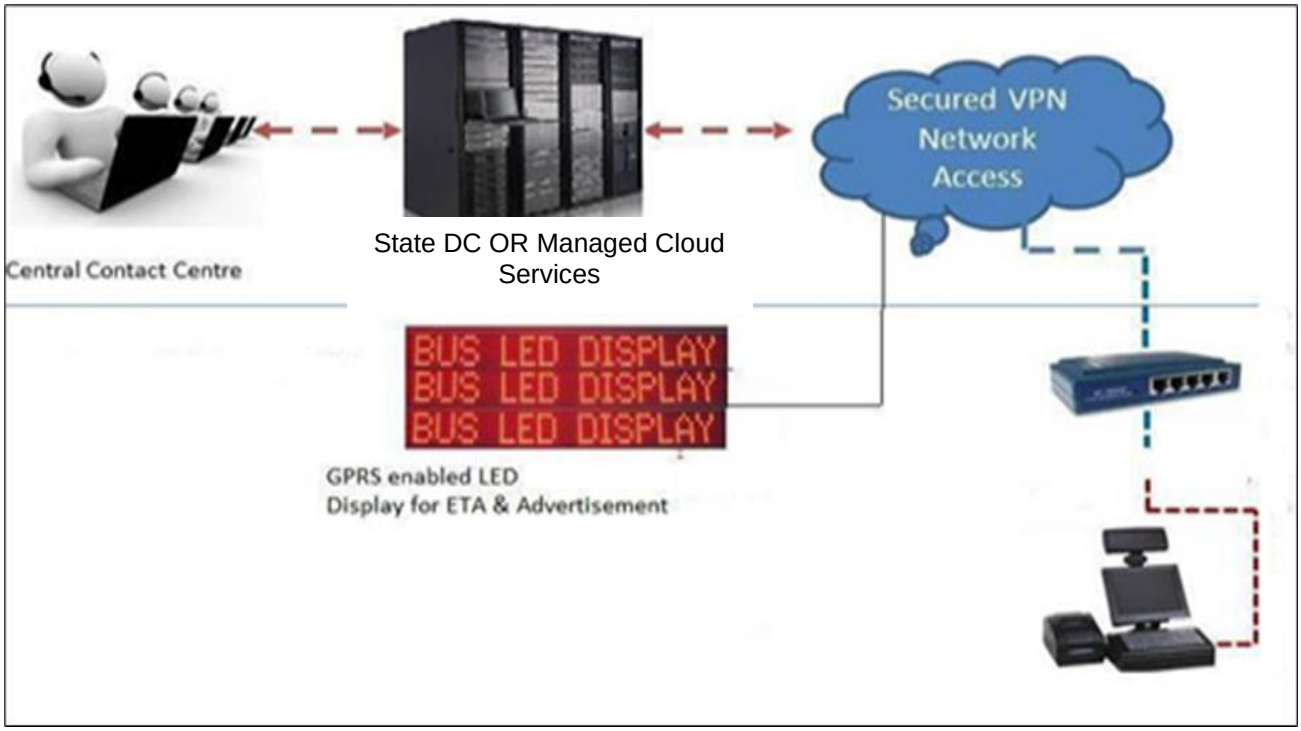
3.4.2. Technical Coverage

The system should be scalable and extendable to handle increase in the requirements in future. The technical components of the project will include central infrastructure, network infrastructure, IT security infrastructure and ITMS software.

The technical solution proposed should have the following minimum features:

- Scalability - All components of the architecture must support scaling to provide continuous growth to meet the growing demand of Odisha Municipal Corporation.
- Availability - Components of the architecture must provide redundancy and ensure that there is no single point of failures.
- Security - The architecture must adopt an end-to-end security model that protects data and the infrastructure from malicious attacks, theft, natural disasters etc.
- Manageability - Ease of configuration, ongoing health monitoring, and failure detection are vital to the goals of scalability, availability, and security and must be able to match the growth of the environment.

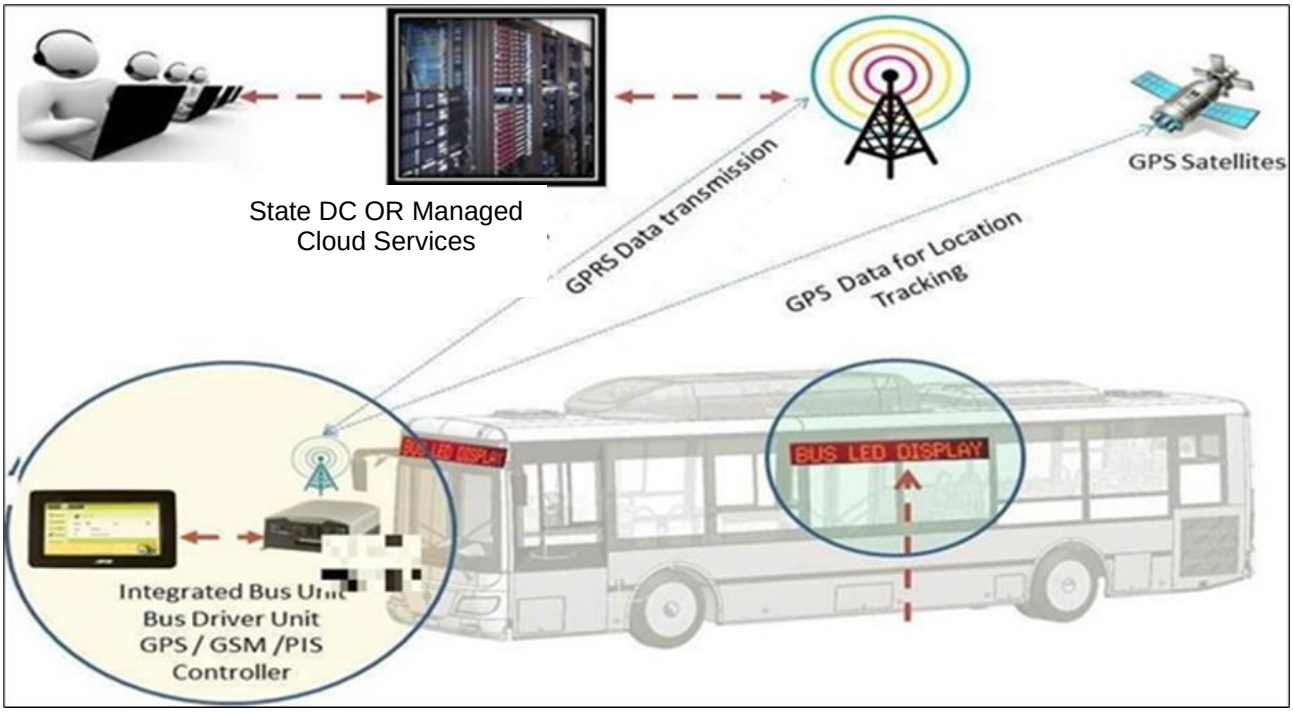
3.5. Bus terminal ITMS Overview



Bus terminals will be facilitated with PIS (LED Displays), Kiosk or Ticketing counters and will be integrated through command-and-control centre (CCC).

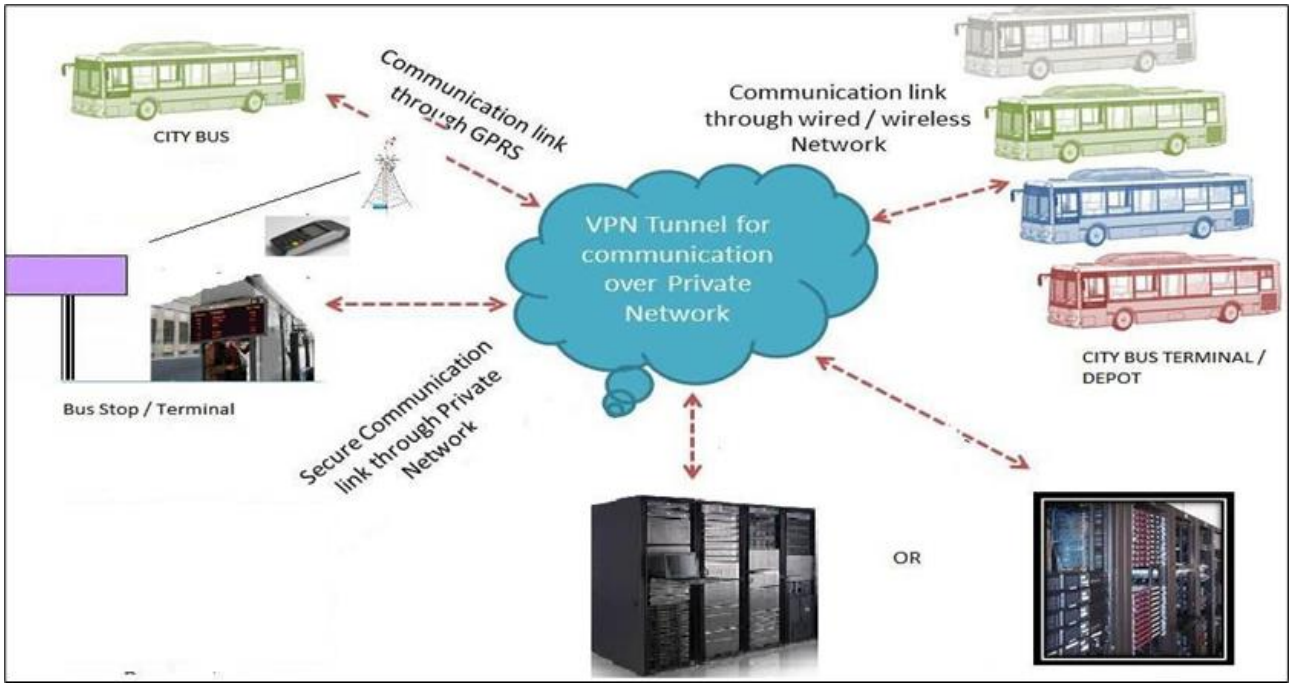
Passenger Information System (PIS) will be installed at the terminals with chemical locking to avoid theft and damage of the property. The PIS will be integrated with CCC through GSM module present in PIS.

3.6. Bus ITMS infrastructure Overview



Buses will be integrated with CCC through Bus Driver Units or On-Board Units. OBUs/BDUs will communicate with CCC with a GSM service. PIS present with in bus will be integrated with CCC and will be updated through OTA. The operators will be monitoring the real time bus information from the CCC.

3.7. Communication Overview



The entire ITMS system will be integrated with CCC. Buses will be communicating with CCC through the GSM module available with OBUs/BDUs. PIS at bus terminals will also be communicating with CCC through GSM.

4. Functional Requirements

4.1. Automated Fare Collection System

4.1.1. ETIM Ticketing

After implementation of project, the tickets will be issued to passengers through Electronic Ticket Issuing Machines (ETIM) inside the bus or at the booking counter. It will be done on a real-time basis through the GPRS-enabled EMV based ETIMs, as opposed to the current situation wherein manual printed tickets are issued to passengers and reconciliation done at the end of the journey or end of the day at depot.

Bidder shall have to design, develop, install and maintain centralised ticketing system as per standard specification mentioned for Common mobility cards.

Bidder shall have to procure, install and maintain EMV based ETIMs and its related accessories. ETIM shall be EMV certified GPRS machine and will have capability to send ticketing data without data loss to the central system. These ETIM machines shall have capability read and validate EMV OSRTC Transit Cards (OTCs).

During travel in a bus, the passenger specifies the destination of travel to the conductor who then uses the ETIM machine to punch in the necessary details (destination code, passenger category, no. of tickets, etc.) and generate the e-ticket using the thermal printer. The conductor collects the fare in case the commuter wishes to pay in cash.

Passengers with OTCs will show their card to the conductor for cashless payment of fare. Conductor will tap the contactless card on the ETIM machine, which will validate the card and deduct the fare amount for the route from the card. The final amount will be written back on the card by the ETIM machine.

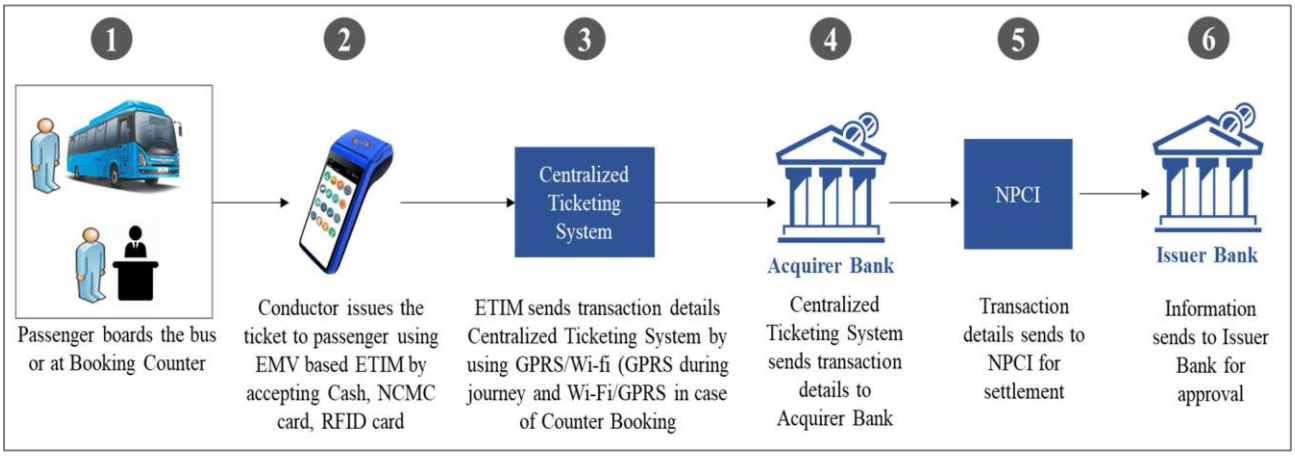
The centralised ticketing system shall further send the transaction data to the Acquirer Bank. Clearing House settles the payment balances between the Issuing and Acquirer Banks/FI daily (in case of an Open Loop card implementation).

Provide EMV as well as PCI-DSS compliant hardware for acquiring related applications as per OTC specifications.

Provide NCMC Certified payment application for collection and settlement of fare against cash and OTCs.

This change enables the OSRTC to conduct an ongoing assessment of ticket sales, seat availability, as well as keeping tabs on pilferage on the bus when it is on the move. Data can also be synchronised on Wi-Fi if there is data loss on GPRS, when conductor reaches the depot.

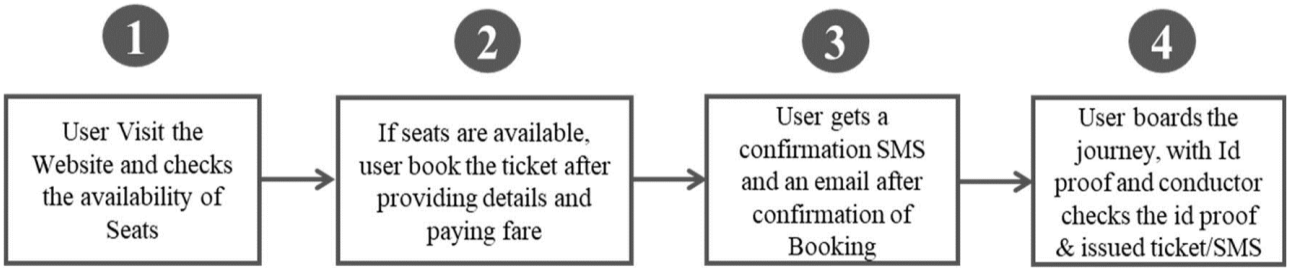
The figure shows below describes the to-be process flow for ticketing process inside bus or at booking counter.



4.1.2. Online Reservation System (ORS)

The bidder shall have to enhance the current online reservation system with suitable use of technology and integrate with the centralized ticketing system.

The figure below shows the online process flow:



4.1.3. Mobile Ticketing Solution (m-Ticket)

- The selected Bidder shall have to enhance the mobile app and integrate with the centralised ticketing system.

- Bidder shall be required to operate a 24x7 call centre services for the users of mobile ticketing system and technical support to resolve their queries.
- The selected Bidder to integrate mobile ticket solution with ORS and AFC system and to provide necessary reconciliation mechanism.

4.1.4. Digital Fare Collection

The following are the processes defined for the purpose of the proposed digital fare collection system.

Card Issuance

- FI/Bank shall be responsible for instant issuance of OTCs at depot/sub-depot level and carry out related activities to meet the objective of open loop ticketing system. Besides, the OTC Debit cards issued by any banks will be used by customers for fare payment.
- This includes both personalized as well as non- personalized cards. FI/Bank Shall provide the personalized cards for concession pass holders and employee/staffs based on OSRTCs requirements with required details of photo, name, Age printed on the card.
- OSRTC shall review and approve the card design before proceeding with printing by FI/Bank.
- OSRTC shall facilitate issuance of FI's prepaid /Concessional OTCs from depot counters through operators/ OSRTC personnel. However, the issuance from counters by OSRTC's personnel shall in general be limited to only instant issuance requiring minimum KYC. FI/Bank shall make its own arrangement for converting to Full KYC.
- FI/Bank to take necessary measures to minimize the card issuance time and transaction time.
- FI/Bank shall have the option to issue the OTCs as per the payment scheme of their choice in mutual consent with OSRTC, but system should support acceptance of all the three payment scheme cards (MasterCard, Visa and RuPay)
- FI/Bank shall define the process and guideline for issuance of different OTC types such as pre-paid, credit and debit cards.
- FI/Bank shall provide an easy-to-use website and Mobile app service, which can be also their exiting net-banking and mobile banking application, to enable commuters for requesting the cards for OSRTC. Commuters should be able to fill the required minimum details including KYC and collect the smart card kit at the depot with ease by showing a code for the registration form confirmation. FI/Bank shall also provide the APIs for the same as per request from OSRTC to enable this service through its Mobile app/website & other third-party apps as approved by OSRTC.
- FI/Bank shall be responsible for all compliances and business-related aspects of the card and OSRTC shall not have any liability for the same.
- FI/Bank to propose and set up process to enable conversion of min-KYC cardholders to full-KYC.
- Design, development and maintenance of an Interoperable OTC Smart Card Application and Card data format
    - FI/Bank shall define the interoperable data format and standards of smart cards and terminal interfaces as per OTC (a common mobility card) specifications for KEY and SAM management etc.

- The smart card should be compliant with all EMV & NCMC regulations and should be a dual interface card (Contact & Contactless) capable of performing EMV and transit transactions on the relevant terminals.
- The Smart Card to be used with the Back-Office System for Open shall be ISO 14443/ISO18092 compliant.
- The Smart Card shall have an operating frequency of 13.56 MHz
- The dimensions of the smart card shall comply with ISO 7810
- The resistance of the Smart Card to mechanical stress and chemicals shall comply with ISO 10373

- FI/Bank shall maintain entire life cycle indicative activities of OSRTC Transit Card (OTC) such as:
  - Issuance of Smart card
  - Activation of Smart card
  - Deactivation of Smart card
  - Blacklisting of Smart card
  - Re-loading/ Re-use of Smart card
  - Loss of Smart card and
  - Replacement of Smart card etc.

Transaction Acquiring

The customer will use the OTCs for digital fare payment. The selected bidder will be responsible for the acquiring of these transactions done using OTCs issued by any Bank certified as per OTC specification.

Transaction Settlement

The bidder should support the transactions settlements across multiple Issuer Banks through Central Clearing House (NPCI). The key points to be noted are as follows:

- The customer will be able to use the OTCs, issued by any Bank, for the fare payment.
- Partner Bank will integrate with the AFC System for seamless acceptance of payments on ETIMs through OTCs.
- Bank will be responsible for cash management, reconciliation and settlement activities.

Card Top-up

Bidder shall provide various payment channels for the Card Top-up on the web/mobile interface provided by the Authority/its vendor.

- FI/Bank shall be responsible for setup process and enabling the Top-up of all OTCs at OSRTC's service points issued by any Bank under any payment scheme, based on commuters' request. The FI/Bank shall not charge any additional fee for such services from the Customer or the OSRTC unless otherwise specified in the agreement.
- FI/Bank shall provide acquiring interfaces for top-up channel of the OTCs.
- FI/Bank shall enable online top-up of OTCs through its mobile app and website (inter-operability for top-up of other bank cards to be enabled as and when permitted by RBI)

- FI/Bank should provide the required APIs and documentation for enabling such top-up through its mobile app/website & other third-party apps on approval from OSRTC.
- Commuters shall be able to check balance/transaction statement of the FI/Bank issued OTCs via SMS, or web-based channels, mobile apps etc.

This should support standard Internet security including, but not limited to Digital Certificates, Various levels of encryption, Secure Socket Layers (SSL), Secure Hypertext Transfer Protocol (HTTPS). FI/Bank shall be responsible for the Top-up of OTCs, issued by any Bank, based on customers' request. The Bidder shall not charge any additional amount from the Customer or the Authority unless otherwise agreed in the agreement.

Hardware Provisioning

- Provide necessary hardware for all required applications as per the mentioned Scope of the Services to be provided by the bidder. Kindly refer to Bill of material as per clause 15 of section V of the RFP document.
- Certify Acquiring Host as per EMV, PCI-DSS and NCMC standards.

Non-Payment Usage

- Bidder to ensure all non-payment use cases are met and necessary integration with Authority's domain systems are completed.
- The authorities may appoint a 3rd party agency to certify the data formats and standards used by bidder for terminal interface.

Service Points Management

- Bidder to provide support /services are their service point to OTC commuters.
- Bidder to ensure that the Service Points display the OTC Issuance activity prominently.
- Bidder will facilitate following through Service Points:
    - Instant card issuance and card top-up as per given process (in case of general cards)
    - Bidder to maintain inventory of prepaid general cards.
    - Help end users / customers with the use of cards.

Fraud and Risk Management

Provide risk, fraud and dispute/chargeback capabilities including KEY management.

Helpdesk and Dispute Management

- Provide central toll-free helpdesk/ IVRS to handle OTC transaction related issues.
- Provide OTC dedicated support to Issuer Bank with reference to transaction dispute, refunds, chargeback and merchant account management as per RBI requirements.

Certifications and Compliances

The bidder will be responsible for necessary certifications and compliances required for transactions acquiring of OTCs. The table below provides an overview of the certifications required for an Acquirer Bank, issuer bank, ETIM certification requirement.

Issuer Bank Certification Requirements:

S. No	Product/System	Role in Payment Eco-system	Certification Type	Followed Guidelines
1	Card	Issuance	Physical Card	EMVCo
2			CMC Application	NCMC
3			White Plastic Certification	NCMC
4	Issuer Host	Transaction processing by Issuer Bank	Issue Host Certification	NCMC
5	Central Clearing House Certification (CCH)	Clearing and Settlement	CCH Certification	NCMC

Acquirer Bank Certification Requirements:

S. No	Product/System	Role in Payment Eco-system	Certification Type	Followed Guidelines
1	Acquirer Host	Transaction processing by Acquirer Bank	Acquirer Host Certification	NCMC
2	Central Clearing House Certification (CCH)	Clearing and Settlement	CCH Certification	NCMC

ETIM Certification Requirements:

S. No	Product/System	Role in Payment Eco-system	Certification Type	Followed Guidelines
1	Terminal	Acceptance	Hardware Level Requirement (L1)	EMVCo
			Terminal Kernel-(Contact L2)	EMVCo
			Terminal Kernel-(Contactless L2)	NCMC
			Terminal Application (L3)	NCMC

Admin Console for OSRTC

- To access MIS reports
- The authority foresees the need for implementing changes during the contract period (e.g., generation of new MIS reports, provision to upload additional formats, modify reconciliation logic, etc.). This may also include incorporation of new modes of payment along with the current modes of payment. Bidder to provide the above with no additional cost to Authority.

Field Training, Hardware Maintenance and Spares

- The bidder should have a local technical team set up in city for operations and support.
- The Bidder shall provide a dedicated Relationship Manager to take care of all issues of commuters arising out of this contract.
- Provide training to concerned persons/staffs/officials in Hindi/ English/ local language for citizen-friendly operations.
- Bidder should provide training material and user manuals.
- Bidder should provide training on the FI related MIS report and fund reconciliation.
- Manage hardware in a field including requests for adding new hardware.
- Manage spares in case of faults in the machine.

SMS and e-mail Gateway

Manage email/SMS for citizens and merchants.

Integration with State Road Transport Undertaking Domain System

- Provide MIS integration points for Authority.
- Provide APIs for mobile apps and web applications for the public.
- Facilitate integration between Authority and MIS dashboard requirements.

Settlement & Reconciliation Procedure

- Selected Bidder shall undertake complete OTC-based transaction settlement and reconciliation responsibilities.
- Settlement shall be automatically triggered at pre-defined cut-off time daily.
- Post settlement, the bank shall process & reconcile all transactions performed via all delivery channels.
- It shall be possible to generate settled and unsettled transaction summary alerts. For transactions where reconciliation has failed, they will be flagged for reversal/dispute resolution.
- OSRTC may open a separate settlement account with FI/Bank, if required. Post settlement, FI/Bank shall transfer payment of settlement amount on next day (T+1) by 10:00 hours in OSRTC's designated Account (in Bidder Bank or another Bank). For the transactions occurred on Saturday, Sunday or any holiday as declared under the Negotiable Instruments Act 1988 or any bandh/bank strike etc., the transfer of payment will be conducted concurrently on the next working day. Bank shall make flexi deposit on the very same day of credit after leaving minimum balance i.e., mutually agreed for a minimum period of 365 days at Bank Bulk card rate and whenever fund is required to transfer flexi deposit shall reverse as per instruction of Authority.
- For any delay in settlement of daily cash collection/card-based transaction to OSRTC's accounts beyond T+1 day, the OSRTC reserves the right to deduct the Damages as amount by charging interest rates of 12% per annum for any additional period for which cash settlement is delayed.
- Selected Bidder shall undertake reconciliation of cash collected and transaction reported.
- Selected Bidder shall have to provide explanation for any discrepancy found.

Information and Data Security Measures

- The Bidder shall take all necessary steps to ensure strict confidentiality of the information provided by the Bidder, during the contract period, after the contract expires or is terminated for any reason. The Bidder shall isolate and clearly identify the OSRTC's customer information, documents, records and assets to protect the confidentiality of the information and build strong safeguards so that there is no mingling of information/documents, records and assets, where the service is provided to multiple entities or Banks from the same Hardware/Location.
- The Bidder shall not divulge any Data/information received from the OSRTC to any other person/ entity without prior written permission of the OSRTC and neither will he use the data himself for any other purpose without prior written permission from the OSRTC.
- The Bidder, upon the written request of the OSRTC, shall allow the authorized representatives of the OSRTC (including internal/external auditors acting on its behalf), Reserve Bank of India or any other Statutory Authority for Inspection, Audit and IS Audit purposes at all reasonable times to have access to its records relating to its performance from time to time and also obtain copies of any audit or inspection or review reports or findings made on the service provided to the OSRTC.
- The Bidder shall ensure that the Internet Payment Gateway provides extensive automatic checks that substantially reduce risk. These include but not limited to:
    - Valid Credit/Debit card number check
    - Duplicate order check
    - Frequency of card usage
    - Captures IP address of cardholder performing the transaction.
- The Internet Payment Gateway shall employ 128-bit encryption or higher levels of security while communicating between the AFC server and FI/Bank to ensure the security of online transactions (As per RBI guidelines).
- The Bidder shall employ both software and hardware encryption to ensure the highest level of security.
- The Switch and Payment Gateway shall have PCI DSS and EMV compliance.

Bus Pass Issuance System

- The selected bidder shall have to design, develop and maintain an online pass issuance system for free and concessional travelers of OSRTC. The list of free and concessional travelers is provided at Scope of Work.
- The process flow for the pass issuance system would be changed after implementation of this project. OTC based personalized smart cards would be issued to users instead of paper-based cards. These passes shall be non-transferable and valid for a certain time period. Pass information shall be printed on the card including user details along with photo, type of pass, expiry date, etc.
- Bidder shall also be responsible for procurement and maintenance of following scope items at depot level during the entire contract period:
    - OTCs
    - Camera for taking photographs of applicants.
- The bidder shall be responsible for printing personalized smart cards after getting approval of design from OSRTC.

- These cards shall be validated inside the bus using ETIM machines by conductor and real time information would be synchronized with centralized server. A zero-value ticket will be issued against this pass.
- The cost of cards shall be as per the decision taken by the OSRTC and OSRTC will collect and retain the cost of cards and will not transfer any amount to the bidder in lieu of issuance of cards.
- The bidder shall be responsible for issuance of only 10 lakh cards (Personalized Bus Pass only) during the contract period. If there is an increase in the quantity of cards, the cost shall be mutually decided between the bidder and OSRTC.

GPS System

- Bidder shall be responsible for design, development and maintenance of GPS System for real time tracking of buses.
- GPS enabled ETIM device would be used for real time tracking of buses. That device transfers the collected data to the central servers on real-time basis by using GPRS connectivity.
- The system should provide tracking and reporting of the locations of buses/device with a positional accuracy of 2.5 meter, regardless of whether the vehicles are moving, on route, off-route, have no assigned route; or whether the vehicles are logged into the System.
- All vehicle movement on GPS maps and displays shall be based upon actual vehicle location reports and shall not be simulated.
- In the event of loss of GPS derived vehicle position information, vehicle location shall be determined with dead reckoning techniques utilizing the existing vehicle odometer or other means and technologies which provide position accuracy equivalent to GPS tracking. The event should be generated when dead reckoning is utilized.
- The map shall be capable of supporting a variety of map attributes that shall include, but not be limited to, all streets, highways, prominent geographical features, routes, bus stops, time points, and transfer points. The provision for selective updates of the base map and to any selected overlays shall be possible without reimporting the entire map and all overlays and without loss of prior map.
- The System should be capable of defining an unlimited number of bus stops, routes and nodes. The system should accurately align vehicle locations with the streets and routes on which the vehicles are operating. There shall be no visible offsetting of vehicle positions from the displayed streets and routes.
- The GPS System also could import stop data from an external system.
- The system should send the alerts in case of deviations from the authorized route and recorded in all cases for reporting and review. The system should send the alerts on all other pre-configured parameters such as non-stoppage at designated points, unauthorized stoppages, vehicles stopping for long duration, not meeting the ETA and ETD schedules etc., and logged into journey details of the bus for each trip
- The Device settings should be updated including software/firmware updates through transmission via the secured communication network set up by the bidder. For reasons of security, device settings should not be modifiable by field staff of the bidder/others.
- The GPS device settings modifications including software/firmware updates as well as business rules such as fare settings, discounts etc. shall be done with prior authorization by OSRTC. A digital log of all changes of settings on each device shall be maintained and delivered to OSRTC.

- Bus bunching alert shall be raised in case multiple buses that are moving on the same route in the same direction are within a user specified distance. OSRTC shall be able to change threshold value of this distance at real time for each route as per the operational requirement.
- In case some feeder routes bunching is unavoidable. Similarly, in case of festival, there can be bunching of buses to cater to heavy demand. To take care of such scenarios, System shall allow enabling disabling of the bunching alerts on specified routes based on operational requirements.
- The bidder shall also be responsible for integration of existing or new VTS devices fitted on existing or new buses.

Command and control Center

A Command Control Centre will be set up by the OSRTC with required hardware and network connectivity. This will act as a live hub to manage and monitor service-related data which will be viewable through a centralized web application. The bidder will have to provide the software for the same and perform following activities (not limited to below:)

- Overall monitoring services and incident management with defined escalation procedures
- The Estimated Time of Arrival (ETA), Estimated Time of Departure (ETD), Information of the buses and other GPS parameters for management decision making, AFC system parameters/data, Database, MIS dashboard/application can also be monitored from the CCC.
- OSRTC personnel will be trained to oversee the Command Control Centre by the bidder.
- The system should be able to monitor the bus's location and activity.
- Solution shall be used to manage inputs from the field devices.
- Solution should monitor and maintain electronic & software systems.
    - Process and organize data.
    - Respond to incident.
    - Prepare for operations.
    - Monitor security activities.
    - Maintain systems and information.
- Solution should provide configurable rules with tailored alerts, dashboard visualizations, intelligent role-based workflow, response tools and situation collaboration.
- Provide configurable intelligent operator console based on the jurisdiction, critical area or sensors to monitor as per situation demands for focused surveillance.

4.2. Automated Vehicle Locator System

The Automated Vehicle Locator System (AVLS) shall primarily use GPS devices mounted on the vehicle as primary source of data for tracking purposes. The AVLS shall also facilitate CCS to enable public information system to act as a source of information to be displayed on the public display screens and voice-based information. The AVLS shall essentially comprise of following components:

- ➲ Bus Mounted GPS based Signal Control unit & Bus Driver Unit for all the buses.
- ➲ Inbuilt Surveillance system in all the buses
- ➲ On-board and off-board Passenger Information System for all the Buses
- ➲ GIS Based Fleet Monitoring and Control System

The AVLS system shall enable OSRTC operations team to monitor vehicle movement in real-time and synthesize the AVL field data to deliver the same on the public information system devices installed on Bus stops, Terminals, Buses, OSRTC portal and mobile information delivery system.

4.2.1. GPS and GPRS based Vehicle tracking unit – Signal Control Unit

The Signal Control Unit with wireless communication module (based on GPRS/EVDO/Wi-Fi) shall be used to provide vehicle tracking accurately and reliably. The back-end system shall be able to produce MIS reports of the vehicle schedule adherence report and operated kilometers by each bus, by route and by fleet of each Service provider. OSRTC may require additional information to be extracted from the vehicle tracking information logged at the control Centre.

The system shall be able to provide online WEB interface for positioning of the vehicles in the system Bus Driver unit (BDU) shall be in front of the bus driver for two-way communication, messages to be sent by driver and messages to be sent to the driver from the control center. BDU also provide driver to view passengers through camera and record the same in case of emergency with high resolution. The Signal Control Unit and Bus Driver Unit shall be mounted on bus by the Bus supplier as per UBS 2 Specification and protocol shall be shared with service provider for integration. Software Application shall be provided by OSRTC for route updation and route display.

The Signal Control Unit will act as the sole management console for devices onboard like PIS and AFCS equipment. The BDU shall operate PIS manually in-case of GPS outage.

4.2.1.1. Features of SCU UNIT

The Signal Control Unit shall primarily be able to help central monitoring system to generate minimum of following data points as minimum and at the time of finalization of requirements a comprehensive requirement shall be furnished to the vendor:

- Start Stop
- Begin – End Shift
- Fleet Summary
- Detailed Activity
- Speed
- Fleet Status
- Alerts
- Battery Report
- Unit ON/OFF Report
- Ignition ON/OFF

OSRTC can request other reports / data / information as deemed necessary for management purposes.

The unit shall also be able to deliver real-time information to drivers with respect to route information, messages from control center and any other intervention that may be required to ensure operational sanctity. All the data should be linked with the AVLS server for authentication and tracking purposes.

4.3. Passenger Information System

The passenger information system shall consist of following units which shall offer customers schedule and real-time information regarding operations of OSRTC Bus Service and extend ease of information Delivery related to travel:

- Display Screen on Bus stop.
- In bus Display in all the buses
- Display Screen on Bus Terminal
- Display Screen on Bus
- Voice announcement system on Bus
- Integration of Web OSRTC Portal for Bus Schedule & ETA
- Development of Mobile Application & integration for bus schedule & ETA etc.

The display systems at bus stops and bus terminals shall display real-time information of the route and estimated time of arrival using fixed data connections/mobile data connection with the central vehicle monitoring system. The system shall have the capabilities to clearly indicate the current locations, expected time of arrival, route no, destination, messages, of the buses plying on the route from a central database on the display to assist passengers.

PIS equipment's shall be fitted on the bus as per UBS 2 Specification. The bus display units on the front wind shield, the back window and side window shall display bus route information and the inner display shall display real-time information of the stops bus is going to pass through preferably by showing real-time position of the bus on a transit line diagram. The voice information system shall also derive information of the next bus stop / terminal based on the location information derived from the GPS unit and shall have capabilities of playing pre- recorded voice information in the bus.

The OSRTC web portal shall enable passengers to get information about the bus schedules on various routes operated by OSRTC and shall also have facility to deliver ETA based on the real-time data from GPS central monitoring system. The web portal shall also provide a facility to passengers to extract such data through the mobile communication system.

4.3.1. Mobile Application:

Real-time bus tracking system (Support 3rd party application provider) shall ensure to provide-

- Complete information on bus routes and stops to commuters.
- Real-time ETA for a combination of bus route and stop.
- Real-time tracking for the bus on the map

4.3.2. Passenger Information System Specification

Passenger Information System hardware shall consist of LED based display system for bus Stops, Terminals, and Buses. Following are the technical specifications for the display units. The passenger information system shall comprise of following components:

- Display Screen on Bus Stop
- Display Screen on Bus Terminal
- Display Screen on Bus
- Voice announcement system on Bus
- Web Portal for Bus route Schedule & ETA

- Mobile Schedule Access System

4.3.3. PIS at Bus Stops/ Terminals

LED based display screens that provide sufficient visibility in broad daylight condition shall be installed at OSRTC bus stops and terminals. Display unit at Bus Stops / Terminals shall receive dynamic data of the current locations, expected time of arrival, route no, destination, messages, of the buses plying on the route from a Data Centre / central database and. Advertisements, notifications, announcements, fares for the different destinations and categories of commuters. The display units shall receive data on communication network for data movement Messages shall be displayed in bright colors such as RED or AMBER, on multiple lines to be able to view during bright day light and support multilingual format shall be mounted on a rugged enclosure to withstand harsh environmental conditions and secure from vandalism.

The display shall receive encoded information of route and ETA from the AVTS control center through the common wired/wireless communication link set up at each bus stops/terminals. The displays must have the ability to decode the information received from Data Centre /CCS and display appropriate message on the screen.

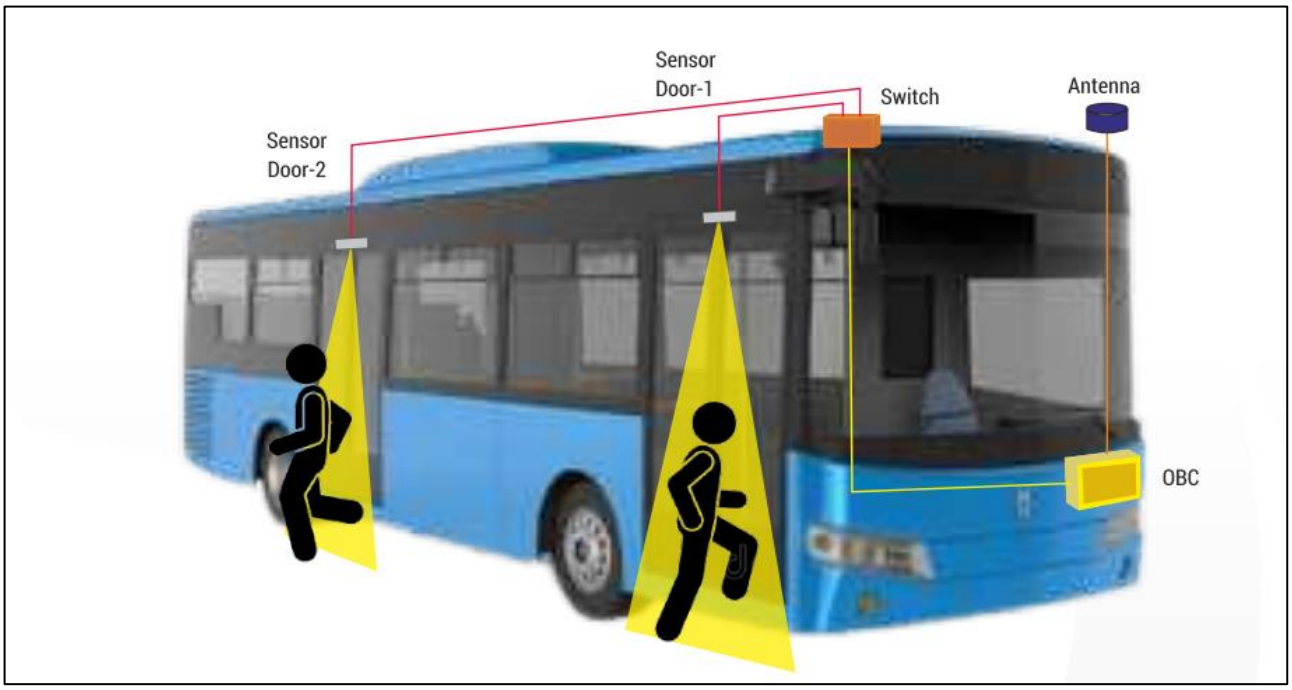
- LED Board at Bus Stop / Terminal shall have the following functional specifications:
- Display of PIS in a display unit at bus stop / terminal shall be configurable based on bus stop and terminal. Single unit should display services of more than one platform.
- Information Display units will be supplied and mounted appropriately, configured, and commissioned by the vendor.
- PIS information shall be displayed in English & Odia alternatively (single or multiple language shall be configurable).
- At all these bus stop/Terminal, display units will receive/display transmitted contents from the data centre server /central system through a gateway or mention other suitable means in the technical architecture.
- Display systems needs to support full colour display for streaming advertisements, Digital display of text, images, and video on LED screens.
- Displayed messages must be readable in high bright, day light.
- Display system in addition to the display of information for PIS shall be capable of displaying advertisements and multimedia content at the bus stops and may need to alternate between Passenger information and Advertisements.
- The frequency and period of information display on PIS display shall be configurable from central location for advertisements and other transit information.
- Display shall provide for modular configurable layout enabling parallel display of content on different areas of the screen – Real time Transit information (Routes, ETA, Type of service, Fare, Time/Date, Public announcements, Safety information, Commercial advertising, a ticker tape at the bottom for text announcements/advertisements, other local Tourist information).
- All displays for PIS will have a configurable refresh rate with minimum of 5 seconds.
- Display units shall be mounted on a rugged enclosure to withstand harsh environmental conditions with reasonable physical security.
- Display will be located at a convenient height to have a clear view of the message of next arrival bus.

- Fitment provision will have to be provided in the Bus Stop/Terminal. The power supply would be provided by OSRTC, whereas operational and maintenance should be taken care by Service provider.
- Passenger information system on bus shall function as an independent system and shall not be directly dependent on the CCS. They shall receive display information and voice announcement commands from the onboard GPS vehicle control module based on stored memory on the bus. Specifications of PIS units shall be installed on bus as per UBS 2.

4.3.3.1. Passenger Counting System on Bus

Automatic Passenger Counting Systems should offer an intelligent system for passenger counting that has been tested and verified. This Automatic Passenger Counting (APC) System is based on sophisticated sensor technology for accurate passenger in & out counting as well as real time bus occupancy. In the times of pandemic like COVID, the Automatic Passenger Counting System will offer benefit to the commuters in following the social distancing recommendations while using public transportation. Through the system, the number of passengers travelling can be easily regulated.

The system should be efficient in tracking the passengers boarded and alighted from a bus. The system should show live occupancy numbers in public transport vehicles, that distinguishes the number of entries and exits in mass transportation vehicles. The device and solution should be able to store at least seven days data and should be capable of syncing automatically with central data center.



Functionalities:

Determination of passenger traffic

The bus passenger counting sensor captures real-time data and gives back a reliable check for OSRTC on the scope of evaluation, planning, and optimization of the bus network.

Passenger counting to plan optimal vehicle frequency.

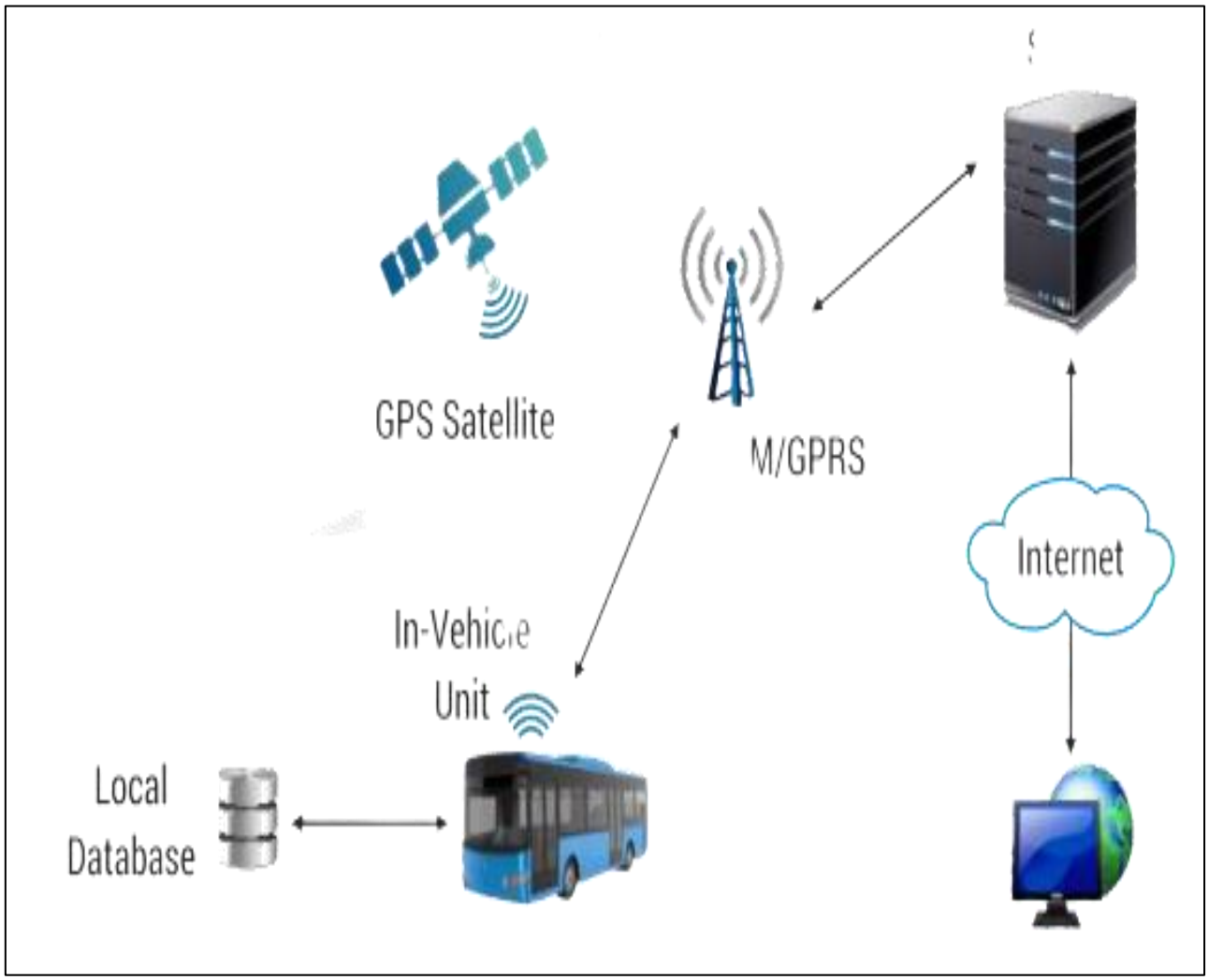
As the automatic passenger counting system offers real-time data of the passenger/commuter traffic, OSRTC can thus articulate the right resources in terms of time and frequency, bringing optimal solutions and vehicle frequency.

Optimization of routes

The system should record the boarding and alighting of passengers at different terminals giving OSRTC an estimate of the traffic on different routes. This information can help you with optimizing routes to the best capacity, ensuring better utilization of resources, energy saving and reduced pollution.

Revenue-driven system

While the data collected by the solution should be diverse and differentiated across human and non-human, it will help in determining the actual traffic that contributes to the revenue of the fleet management system.



4.3.3.2. Voice Announcement system on Bus

The Voice PIS must play clearly audible pre-recorded voice announcements informing passengers of next bus Stop on route. The voice PIS shall interface with the on-bus GPS module to gather location information and make the appropriate next stop/terminal announcement.

4.4. Financial Management Facility

The financial management system shall comprise of enterprise reporting management which shall take care of all accounting functions of OSRTC including fare accounting, disbursal to operations, profit and loss calculations, asset management etc.

The financial management system should also enable OSRTC to manage fares or any other financial transactions with companies offering services to OSRTC. It is envisaged to offer single ticket to passengers to travel across the transport systems in Odisha and hence the financial management system should have capability to account for all such activities and suitably have function to enable payment receivables and deliverables to respective entities – Central Clearing House System.

The reporting for the automated fare collection (AFC) component of the system and the accounting package shall be separate. The AFC system shall provide reporting on transactions and other financial data and shall be separate from a third-party corporate accounting system. FAS shall be integrated with the core FAS of OSRTC.

4.4.1. Financial Management System

The Financial Management system shall be a standard corporate financial management system including P/L and Balance sheet management. The section below describes in detail the requirements of FMS.

4.4.1.1. Central Accounting System

The Central Accounting System shall consist of the following sub-systems/ modules but not limited to.

- Payments Accounting Module/Sub-system (Treasury section)
- Receipts Accounting Module/Sub-System (Treasury section)
- Daily Receipts and payments
- Cross Verification (Daily Sheets) (Accounting Section).
- Bank Reconciliation.
- Investment Module.
- Liability module.
- Suspense (Advances) Module
- Gross Cost Contract (GCC) Module

4.4.1.2. Receipts Accounting Module (RAM)

The receipt of funds shall be a centralized/de-centralized activity in OSRTC and shall be managed by the central financial management system. The receipts from the transportation and allied activities of OSRTC shall be managed in the central accounting system. The RAM shall cover the following major activities:

- Receipt of Funds (Treasury Section)
- Posting in Daily Sheets
- Consolidation into Classified Registers
- Cross Check with Collection Centres and Treasury Section
- Trial Balance (monthly & annually)

4.4.1.3. Payment Accounting Module (PAM)

Payment accounting module shall allow both centralized and de-centralized activity and hence payments shall be made from the Central Accounts Department as well from the other operational

centers as shall be decided by OSRTC. The payees shall be able to put up their requests by means of a credit bill or Performa invoice to the department which has placed an order for supplies or for the work or service provided. After due verification of the supplies received or the work done, the concerned department shall prepare 'payment memo', debits it to the appropriate budget-head and then the head of that department or the person who has budget-drawing powers shall signs it. This payment memo is then sent to the Central Accounts Department. The PAM shall cover the following major activities: -

- Real-time settlement system including electronic fund transfer.
- Payment Memo Approval
- Payment
- Daily-sheet preparation/posting.
- Posting in Bills/Budget Ledgers
- Consolidation into Classified Register
- Trial Balance Preparation

4.4.1.4. Daily Receipts and Payments Cross-tally

The central accounting system shall provide a facility for Item-wise receipts and payment statements (Daily-Sheets) with RAM and PAM every day. These shall be prepared based on paid vouchers and receipt challans, while bank- book (Journal) and cashbook (Journal) shall be written as and when challans are received along with cash or cheques, or voucher is paid in cash or by cheques.

To ensure correctness of daily accounts (receipts and payments) the cash and bankbooks (or main journal) shall be cross-tallied with the sum of the budget item-wise daily statement. If the gross receipts & payments of the day (as per journals) tallies with the sum of the daily sheet, the accounts are presumed to be correct.

- Consolidation into Classified Register
- Trial Balance Preparation
- Depot Management shall automate Depot Operations by providing Vehicle Management, Services Management, Integrated depot management and stores and inventory management.
- Depot management shall manage the information related to various Service providers, shift patterns, Location and Stops details etc.
- This module enables to manage and update depot operations. It should be enabling maintaining Vehicle Details, manufacture details, depot and roles of users, staff management etc.
- Based on the vehicle master data, depot management should automatically create alerts for the maintenance and servicing
- Various kind of equipment fault, vehicle fault, disruption reason shall be maintained in the system.
- Shall also provide role management for managing and creating a role-based access/permission to the users.
- Shall provide managing and adding the Crew/staff details such as employee code, role, current address, contact number, personal information.

4.5. Central control system

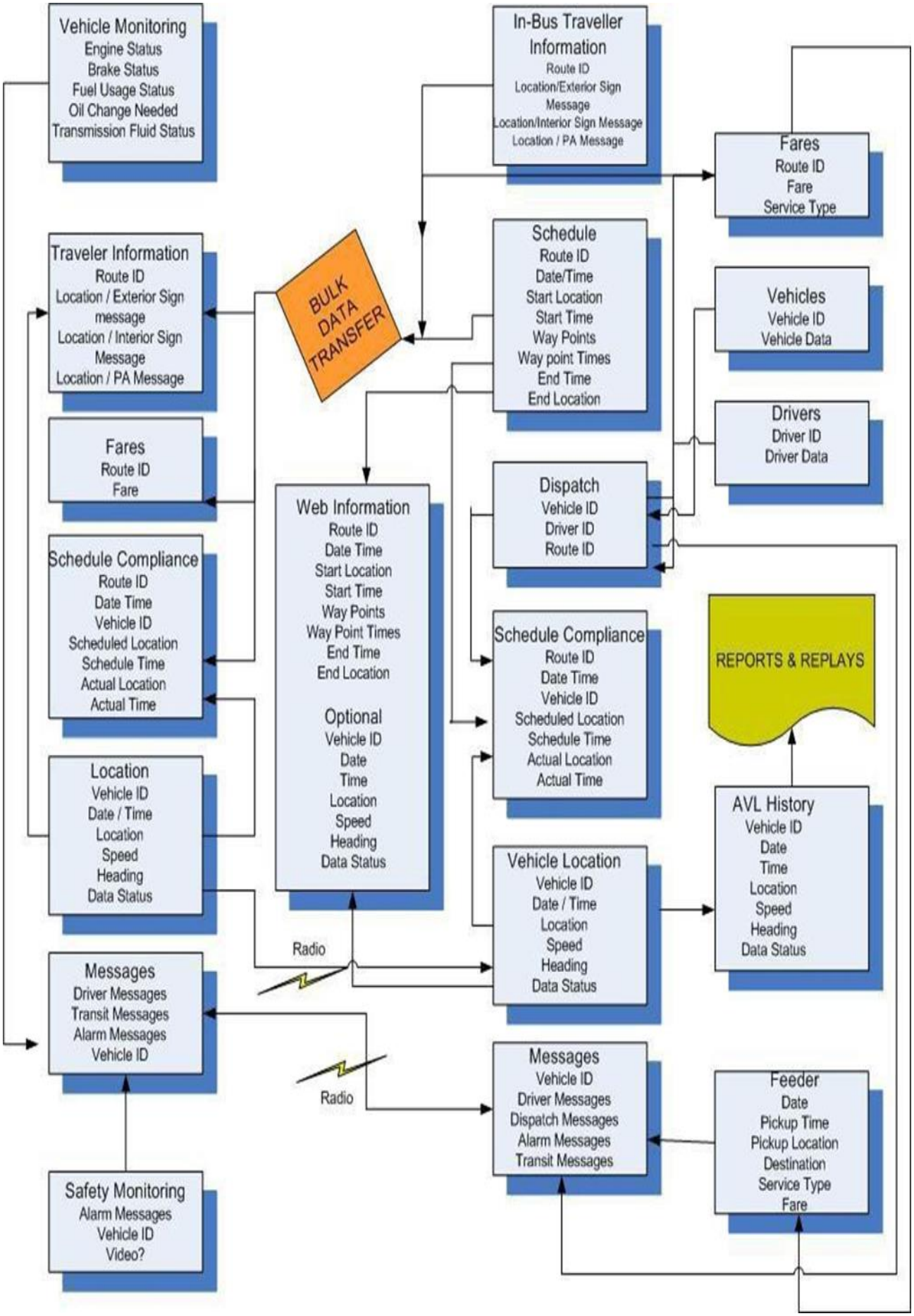
- Central Computing System (CCS) shall generate the necessary management reports from all transaction information received from the AFCS field equipment.
- The CCS shall manage, update, hold and upload Configuration data (SC parameters and fare table information) to all field AFCS equipment.
- The CCS shall automatically collate all transaction data; authenticate security features of transaction data from the AFCS to provide secure and accurate audit and traffic statistics for the Buses / Routes of the depot.
- There shall be a data link between the Personalization Devices and the Data Centre i.e., Cloud Computing System such that the CCS shall control all operations performed by these centrally located devices. The CCS shall allocate encoding and validity dates and other information required for the encoding of fixed data on SC and shall monitor and record all operations performed by the devices.
- Minimum requirement to operate and Maintain Central Control Centre will be 22 Hours for 4 AM to 2 AM operational hrs.
- The Central Control System shall provide integrated console management for vehicle tracking and alerts management.
- The system should be able to provide Decision Support System to the control centre managers to dynamically manage dispatch and scheduling system.

System Description

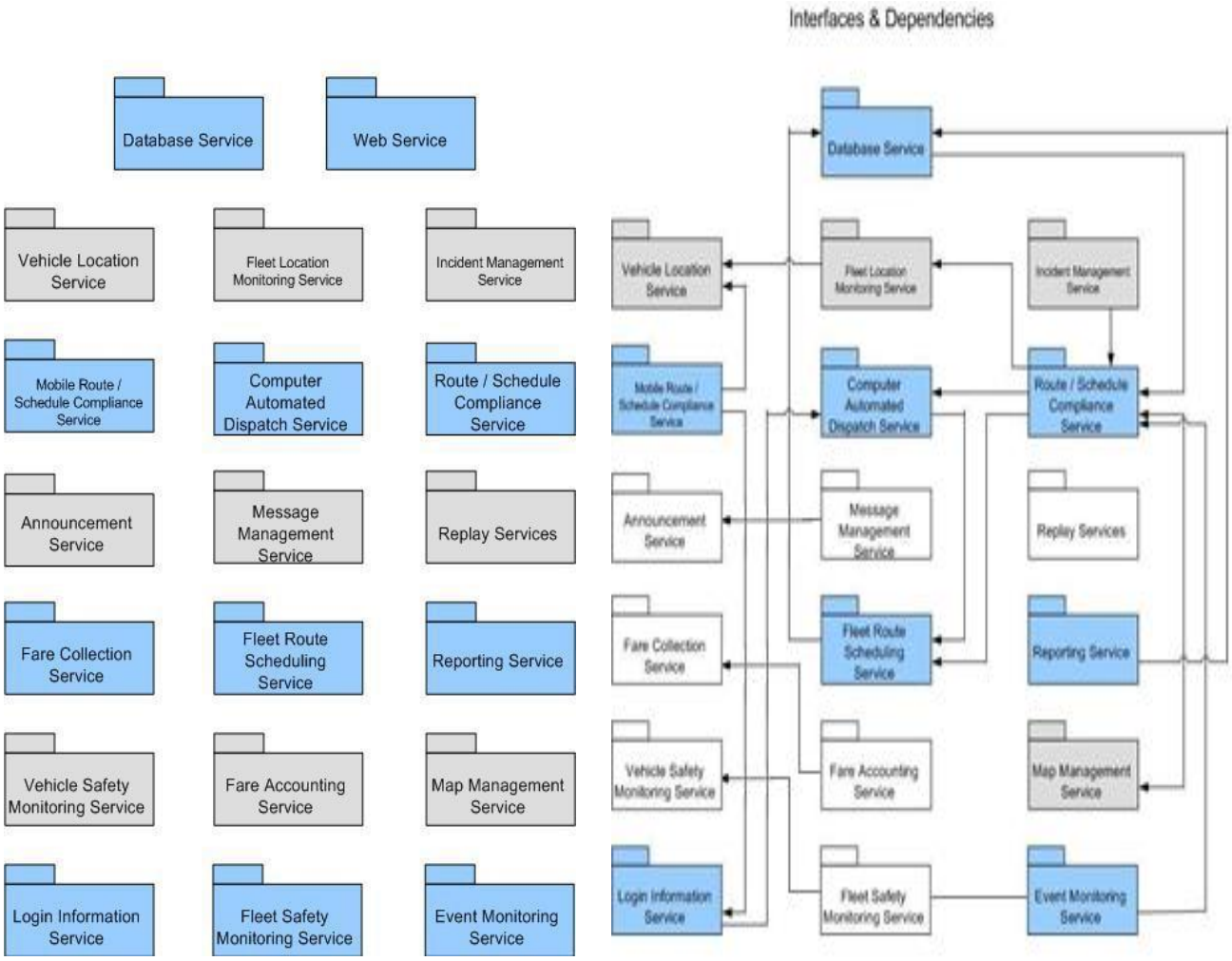
- The Central Control System / Cloud Computing System shall collect data from each AFC system at Terminals / Buses and process the data to provide overall audit, statistical and operational information by start of next day.
- The Central Control System / Cloud Computing System shall poll download only for certain required data in real time (due to any band width limitations in GPRS) from all the equipment through an online server at data centre i.e., Cloud Computing System to enable online reports and information like Vehicle Tracking, blacklisting and faults.
- The service provider shall consult with the OSRTC on proposals for the type and range of operational, maintenance and financial information to be prepared. The final content and format of presentation of processed data shall be discussed and finalized with OSRTC.
- The operator interface to the Cloud Computing System shall facilitate the preparation of ad hoc reports and shall permit both scheduled and ad hoc reports to be produced with data corresponding to user selectable short time periods within an operating day.
- The service provider shall provide enough workstations to facilitate finance, audit, engineering, operations and maintenance functions.
- A hierarchical access control system shall be incorporated across the system to ensure that persons can only gain access to the information or facilities that are relevant and authorized to their specific job.
- The data centre i.e., Cloud Computing System server shall be capable of connectivity with various suitable communication service providers providing GPRS / CDMA / fixed line connectivity through leased lines. All communication networks shall be set up, managed and maintained by the service provider through appropriate contracting terms with communications service providers.

- The data transferred from the field AFCS to the data Centre i.e., Cloud Computing System shall include, as minimum, information such as usage of various equipment, number and cash value of all types of SC issued and topped up, on bus revenue through ETM (cash/smart card), ETM / POS based shift revenue, fault reports and passenger origin and destination traffic data, SC type and period pass type and time of day.
- The data centre i.e., Cloud Computing System shall have facilities to generate, update blacklists for SC and Employee Passes and to download these lists to the Bus Terminal and on bus equipment. Where the devices are online either through wired broadband or mobile wireless data connection, these lists shall be downloaded immediately or offline at the earliest possible.
- The Cloud Computing System shall download configuration data to the AFCS equipment through Depot Management System / over the air for updating. The information shall include system parameters, card parameters, device parameters the fare tables, validity times for SC, date and time synchronization, sub-system application updates, of SC and employee identification number and password updates.
- The Cloud Computing System shall be able to support SC replacement and refund (online only) applications from designated full function BTT devices and from terminals located in the Administration Building. If a SC is corrupted, the operator shall input its engraved or printed card identification number to retrieve the remaining value of the SC, and the recent usage. It shall also provide printing functions on the details of any selected SC that is stored in the CCS with levy of approved fees.
- The CCS shall be designed for autonomous operation of the various components of the AFC system to ensure that a failure in any one component of the AFCS shall not disrupt the system.
- The CCS shall also provide fall-back facilities, in the event of prolonged communication failure with the AFC systems. Such facilities may include updating on bus equipment via communication channels set up at Bus Depots and other means for Bus Depot equipment.
- Depot configuration data files on the CCS shall be copied onto a backup media and hand carried to the Depots for Bus AFCS devices, if necessary.
- The service provider shall make provision for Data Recovery System.
- The system provider shall create a visual tracking space on the wall using LCD/Plasma displays of appropriate sizes to enable control centre staff to monitor different tracking activities. This shall include and not limited to vehicle tracking console, Alerts console, Violations Console, Trip summary Controls etc.
- The central control centre operators should be provided with dual screen option to perform analysis and event tracking in a way that data collaboration can be done.
- The system should additionally provide ad-hoc query-based interface for the analysts to perform complex analysis. The system should provide functions to create new analysis / reports based on the user needs and same shall become part of the user report bin.

4.5.1. Software architecture for OSRTC



4.5.2. Typical view for software components and interfaces



The Service provider shall provide a reliable method of verifying the integrity of the data and program files sent from the Cloud Computing System to the AFCS and the correct reception of data uploads received from the AFCS at the Cloud Computing System

4.6. Incident Management System

Incident management is the process of managing multi-agency, multi-jurisdictional responses to disruptions. Efficient and coordinated management of incidents reduces their adverse impacts on public safety, traffic conditions, and the local economy. Incident management yields significant benefits through reduced vehicle delays and enhanced safety to motorists through the reduction of incident frequency and improved response and clearance times.

Incident management is a planned effort to use all resources available to reduce the impact of incidents and improve the safety of all involved.

An incident is any non-recurring event that impacts the transportation system. An incident includes:

- Crashes
- Disabled or abandoned vehicles.
- Debris in the roadway
- Work zones

- Adverse weather
- Other events and emergencies.

The incident management process includes:

- Detection
- Verification
- Motorist Information
- Response
- Site Management
- Traffic Management
- Clearance

This system would ideally execute following phases:

- The Notification Phase
- The Response Phase
- The Recovery Phase
- The Restoration Phase

Incident management system is envisaged to be implemented as part of ITMS which shall facilitate communication of activities internally to enterprise and externally as well. IMS shall act as a single point of communication exchange for all activities related to incident management.

Surveillance system in Bus

Camera fitted on Buses and Video images will be recorded in CIF mode at SCU fitted in the buses, which shall overwrite after 48 hrs. Video shall be downloaded through USB, SD card or Wi-Fi system. Recorded videos shall be viewed through special software as and when required.

4.7. Inventory Management System

Following are the functionalities of Inventory Management system at depot but not limited to:

- Inventory Management System – Integrated stores management to monitor the inflow, outflow, and maintenance of stock along with its link to stock position, sales and revenue figures etc.
- Stock checking and replenishment – identification of stock thresholds linked with auto- mailers/ SMS alerts to the concerned officer for replenishment of stock.
- MIS Reporting – Reports concerning stock, author, revenue, and any relevant categories should be available in the system.
- Access management – access of officers and individuals should be properly managed, with a complete access log.
- Provision for secure offline transactions – process for such transactions and the syncing mechanism once connectivity is established.

4.8. Depot Management System

- Depot Management shall automate Depot Operations by providing Vehicle Management, Services Management, Integrated depot management and stores and inventory management.

- Depot management shall manage the information related to various Service providers, Shift patterns, Location and Stops details etc.
- This module enables to manage and update depot Operations. It should be enabling maintaining Vehicle Details, manufacture details, depot and roles of users, staff management etc.
- Based on the vehicle master data, depot management should automatically create alerts for the maintenance and servicing

Various Kind of equipment fault, vehicle fault, disruption reason shall be maintained in the system.

4.9. Web Portal for Bus Schedule & ETA

Service provider / bidder shall have to develop web pages which shall be linked to the existing OSRTC Portal to download route information, route schedule and real-time ETA. This information must be accessible using WAP enabled mobile phones also. The web pages shall have facilities for pass application, card top-up using credit/debit cards. Etc. Google map Integration required for AVLS, PIS, ITMS.

4.9.1. Mobile Application for IOS, Android and Windows mobile devices

- The bidder shall develop mobile apps which shall include a mobile application to help passengers to get information about the buses, search and view bus schedules on various routes and deliver ETA based on their real time location.
- System shall show the timetable of the buses, fare structure etc Smart card recharging facility.

4.9.2. Mobile Applications

Bidder shall develop a Mobile application which shall work on at least three major mobile OS platforms. Preferably Android, Microsoft and IOS platform

Bidder is responsible for uploading the software to an online mobile store on behalf of OSRTC without any cost to the commuters.

The mobile application shall have at least the following features:· Smart card recharge · Vehicle location finder ·Real time bus arrival on the selected bus station· Commuter to find the nearest bus station from his/her location along with distance · Display ETA for the selected bus station, buses arrive in next 15 minutes · Find nearest landmark (this will be shared by purchaser) · Provide Fare, Stop name, Stop code, Bus Pass, other major places, feedback, Provide option for commuter to share the photos taken in case of any problem they found on the bus service limited to project jurisdiction.

OSRTC shall be able to view, respond and generate feedback on concerns sent by commuters.

4.10. Enterprise Management System & Security Solutions

- Network Fault Management System - Provides fault and performance management of the network infrastructure that various services operate in. It provides Network Discovery & Reporting, Fault Analysis, Configuration Management, Advance IP Services Management, Service Management, and Integrations with other modules.
- Integrated Performance Management System - Provides comprehensive end-to-end performance management across key parts of the IT infrastructure. It allows identifying trends in performance in order to avert possible service problems and consists of:

- Network Performance Monitoring - The Network Performance Management consoles provides a consistent report generation interface from a single central console. This central console also provides all required network performance reports (including latency, threshold violations, packet errors, availability, bandwidth utilization etc.) for the network infrastructure.
- Integrated Network Traffic Analysis System –provides details of applications, hosts, and conversations consuming WAN bandwidth to isolate and resolve problems. Traffic monitoring system can track 100% of all flow traffic on the network and identify malicious behaviour with all IP conversations. It uses non-intrusive monitoring to reduce the impact on the monitored network and improve scalability.
- Server Performance Monitoring - integrates network performance management systems and give the unified performance state view in a single console. The performance state of the entire network and server infrastructure is visible in an integrated console.
- Database Performance Monitoring - integrates network and server performance management systems and provides a unified view of the performance state in a single console. It automates the monitoring, data collection and analysis of performance from single point.

Application Performance Management System-

- Application Transaction Performance Monitoring System - determines if the root cause of performance issues is inside the monitored application, in connected back-end systems or at the network layer from a single console view. It proactively monitors 100%of real user transactions; detect failed transactions; gather evidence necessary for triage and diagnosis of problems that affect user experiences and prevent completion of critical business processes.
- End-user Experience Monitoring System - measures the end users' experiences based on transactions without the need to install agents on user desktops. It detects user impacting defects and anomalies and reports them in real-time: Slow Response Time, Low Throughput, Partial Response, Missing component within transaction.
- Integrated Helpdesk Solution – an ITIL v3 based Helpdesk Management Solution improves quality and responsiveness of IT support by automating help desk, self-service, knowledge management and root cause analysis. It provides flexibility of logging, viewing, updating and closing incident manually via web interface. The helpdesk solution integrates with EMS event management and support automatic problem registration, based on predefined policies and supports request management, problem management, configuration management and change order management.
- Management of Infrastructure at Client-side locations - Under the proposed ITS, there will be a number of client-side IT infrastructure components, (Desktops, Servers, Laptops, Printers etc.) that will need to be managed from various aspects like asset management, software delivery, patch management, remote control for support issues etc. Specific management solutions should be provisioned to carry out Asset Management, Software Delivery & Remote-Control System for Desktops, Servers and Laptops at client-side locations and central data centre.

Web Application Monitoring System

- The proposed solution must determine if the root cause of performance issues is inside the monitored application, in connected back-end systems or at the network layer from a single console view.

- The proposed solution must proactively monitor 100% of real user transactions; detect failed transactions; gather evidence necessary for triage and diagnosis of problems that affect user experiences and prevent completion of critical business processes.
- The proposed solution must provide deeper end-to-end transaction visibility by monitoring at a transactional level and without deploying any software at end user desktop.
- The proposed solution must provide a single view that shows entire end-to-end real user transaction and breaks down times spent within the application components, SQL statements, backend systems and external 3rd party systems.
- The proposed solution must be able to provide root-cause probability graphs for performance problems showing the most probable root-cause area within application infrastructure.
- The proposed solution must support any combination of operating platforms that support JDKs higher than 1.2 or Application Server (or .NET v1.1 and above) with a single methodology.
- The proposed solution must provide a real-time application topology map to triage and quickly pinpoint the component causing a performance bottleneck in the end-to-end transaction flow.
- The proposed solution must gather available performance indicator metrics from all within real-time production environments and real user transactions 24x7 with minimal overhead on monitored applications without sampling.
- The proposed solution must provide for easy dynamic instrumentation of application code, i.e., be able to enhance out of the box monitoring with extra monitoring definitions without having to restart application or JVM.
- The proposed solution must be able to detect production Memory Leaks from mishandled Java Collections and Sets and isolate exact component creating leaking Collection or Set (or .NET Memory Leaks within the CLR).
- The proposed solution must allow monitoring granularity of no more than 15 seconds for all transactions.
- The proposed solution must provide real-time monitoring of resource utilization like JVM memory usage, Servlets, EJB pools, DB connection pools and Threads.
- The proposed solution must be able to identify socket and file Input / Output activity from the application.
- As a means of detecting poorly performing SQL, the solution must be able to proactively record all SQL calls, and report on the slow performing ones. The SQL measurements must be made from within the monitored application – not using an external database agent.
- The proposed solution must monitor performance of all stored procedures being executed from within the Java/.NET application.
- The solution should have provision for automatic transaction discovery, for example by setting up some bounding parameters to describe transactions like the web site, the language, and parameters (such as post, query, and cookies).
- The proposed solution must provide ability to monitor performance of applications up to the method level of execution (Java/.Net method) 24x7 in production environments with negligible impact on monitored application.
- The proposed solution must be able to report on any application errors occurred while executing application functionalities and pinpoint exact place of error within transaction call stack.

- The proposed solution must provide for at least 2 levels of thresholds which can be set on alerts and provide for actions so that alerts can automatically trigger other processes when thresholds are breached. The proposed solution must not necessitate any changes to application source code.
- The proposed solution must proactively identify any thread usage problems within applications and identify stalled (stuck) threads.
- The proposed solution should allow SQL statement normalization by aggregating hundreds of related SQL statements into a single performance metric using regular expressions and pattern matching.
- The proposed solution must monitor individual web service and performance transaction debugging for web services. The proposed solution must also monitor web services across multiple processes (cross JVM tracing)

End-User Experience Management System

- The proposed solution should measure the end users' experiences based on transactions without the need to install agents on user desktops.
- The solution should be deployable as an appliance-based system acting as a passive listener on the network thus inducing zero overhead on the network and application layer.
- The proposed system must be able to detect user impacting defects and anomalies and reports them in real-time:
    - Slow Response Time
    - Fast Response time
    - Low Throughput
    - Partial Response
    - Missing component within transaction
- The proposed system must be able to provide the ability to create user groups based on application criteria or location and link user ids to usernames and user groups.
- The proposed system must be able to provide user usage analysis and show how user's success rate, average time and transaction count has changed over a specific period such as current week versus previous week.
- The proposed system must be able to provide the ability to detect and alert when users experience HTTP error codes such as 404 errors or errors coming from the web application.

The proposed system must be able to provide root-cause probability graphs for performance problems showing the most probable root-cause area within application infrastructure.

4.10.1. Functional requirements for Security Management System

Security Management solutions shall be able to address identity risk and compliance by validating user access, preventing users from gaining conflicting access rights, controlling orphaned accounts. It shall improve business efficiency and user productivity by enabling users to be immediately productive and allowing administrators to focus on business initiatives rather than mundane, labor-

intensive tasks. The Identity Lifecycle Management solution should deliver comprehensive capabilities that include identity compliance, privilege clean-up, and user provisioning and role management in an integrated solution. The proposed Security Management solution must consist of the following core modules:

- Host-based Server Access Control System
- The proposed Host-based Server Access Control Solution shall be able to protect critical server infrastructure and minimize security risks by regulating access to confidential data and mission critical services. The solution should provide policy-based control of who can access specific systems, what they can do within them, and when they are allowed access. Specifically, it should proactively secure access to data and applications located on Linux, UNIX and Windows system servers throughout the infrastructure.
- Host based security solution shall allow controlling of access to all system resources including data files, devices, processes/daemons, and audit files.
- The solution should provide fined grained User Control. The proposed solution shall allow controlling actions and access to resources of all users including privileged accounts such as root / administrator. The solution shall track the "real user" even in case of surrogates.
- The solution should provide Rights Delegation. The proposed solution shall provide the ability to designate specific users as Administrators, Auditors, and Password Managers etc. with appropriate rights. The proposed solution shall also provide the ability to designate specific users as Subordinate or Group Administrators, to manage users and file permissions for their Group
- The solution should support cross platform Management. The proposed solution shall support management and policy distribution across various Windows, Linux and UNIX platforms from a central management console. It shall support the deployment of the same policies across multiple servers ensuring consistency of security policies across machines in the enterprise.
- The solution shall provide capability to allow access to sensitive resources only through approved programs.
- The solution should provide Process Controls - Administrator shall be able to control the circumstances, under which authorized users may terminate sensitive processes (daemons), including time and day, where from, etc
- The solution shall provide Stack Overflow Protection (STOP) – Shall be able to prevent stack overflow exploits on UNIX systems, to ensure that arbitrary commands cannot be executed to break into systems.
- The solution should be able to fully work with Windows Active Directory in both directions, ensuring any existing deployment of AD infrastructure is not affected.
- The solution must provide support for IPv6 and FIPS140-2
- The solution shall provide administrative password checkout function. It should provide workflow for requesting and checking out a system generated. The solution should provide the functionality to force the user to check the password in once their task is completed, or PUPM should provide the capability to be configured to automatically check the password in after a specific time; and it can be a manually forced check in as well.
- The privilege user password management (PUPM) must provide a fully functional and customizable workflow that provides common out-of-the-box use cases for PUPM. The solution must provide a break glass feature. A break glass scenario occurs when a privileged user needs immediate access to an account that they are not authorized to manage. Break glass accounts

are privileged accounts that are not assigned to the user according to their role. However, the user can obtain the account password immediately, without approval, if the need arises. This eliminates the possibility of a delay for an admin to approve the request. All transactions related to the break glass scenario must securely be logged for audit purposes.

- The solution shall provide a feature to eliminate passwords from scripts. Via PUPM, it should be possible to replace hard-coded passwords in scripts with privileged account passwords that are generated by PUPM only when needed.
- The solution should provide a unified web-based console which consolidates all aspects of privileged user management under a single console — host access control and privileged user management across physical and virtual systems, devices, and applications.

The solution shall support a wide range of virtualization platforms including but not limited to VMware ESX, Solaris 10 Zones, LDOMs, Microsoft Hyper-V, IBM VIO, AIX LPAR, HP- UX VPAR, Linux Xen and Mainframe x/VM, providing for more consistent security management of access control risks across these virtual partitions, in addition to physical platforms.

4.10.2. Identity and Access Management

- Shall provide centralized administration of user-ids and password management.
- Shall provide a central directory of users, their real-world business information, their accounts, and their access rights across the enterprise without requiring changes to end systems.
- Shall have APIs to enable additional user management operations on UNIX, NT over and above the default operating system account set-up.
- Shall have LDAP interface to enable queries/updates by authorized third-party customer tools.
- Shall support enforcement of a centrally defined security policy, e.g., for access rights, password lengths.
- Role-based Administration. Role Based & Rule Based User Provisioning.
- Should have an embedded workflow which would help in automating routine tedious tasks like approval processes.
- Shall provide advanced Web support, to allow for smooth access and personalization of the user interface for each user. Once a user has been authenticated to the sign on system, access to all authorized Web applications and resources shall be handled by this system.
- Shall include out-of-the-box support for specified relevant third-party technologies - Authentication, PKI, and smart cards.
- Shall provide access to only those applications/resources that the user/customer has authority to.
- Shall be able to integrate with user administration product.
- Provide capabilities to perform recertification of identities across the Enterprise.
- Should provide capabilities to have Corporate Directory as well as Provisioning Directory.
- Web access management system itself should use 128-bit RC4 encryption between its distributed components.
- Web access management system should support single sign-on across security domains.

- If a user is authenticated at a low level of security (e.g., password), then they should be forced to re-authenticate when they attempt to access a more sensitive resource (e.g., one protected by a token card).
- The priority of these authentication methods should be Administrator specified. It should not be hard-wired into the product, and Administrator should be able to control the priority of each Authentication method. 1000 levels of priority should be supported.
- Solution should support directory chaining.
- Solution should provide protection from cross-site scripting.
- Administrator should be able to integrate dynamic/external data (at run-time) in the enforcement of my policies via a Web service.
- The solution should provide a seamless universal single sign-on across web and client server applications. Both client server single sign-on and web single sign-on solutions should integrate out of the box.
- Administrator should be able to create policies that perform comparative tests on each user's directory profile information.
- Solution should support controlled "impersonation" of users allowing certain users to temporarily use the entitlements of other users without sharing of passwords.
- Solution should provide single sign-on between the main user portal and its affiliates.
- Solution should support SAML (the standard for exchanging authentication and authorization information between security management systems) without coding, including both SAML Consumer & SAML Producer modes of operation.
- SAML Consumer capability should support both one-to-one user mapping as well as many-to-one user mapping.
- Solution should support full replication of all components.
- Solution should support automatic failover and Failover between clusters.
- Solution should support 4 & 8-way SMP servers.
- Solution should do dynamic load balancing across all servers.
- Solution should also load balance across directories.
- Administrator should be able specify that a certain directory be used for user authentication, but a different directory be used for user authorization. It should also allow.
- Multiple directories to be configured. For example: Customers can be managed in one directory, employees in another, partners in another, etc.

4.10.3. Log Record Collection and Management

- The system shall provide a graphical user interface/wizard to rules for normalizing custom log sources or modifying existing integrations.
- The system shall provide automated update mechanism for Content (product integrations and reports). This process shall occur seamlessly and transparently without any customer intervention as part of the subscription update process.
- The system shall support the following methods for log collection:

- Windows Management Instrumentation (WMI) for remote collection from the Windows Event Log
- Syslog
- Open Database Connectivity (ODBC)
- Text Log (flat file)
- Open Platform for Security (OPSEC)

➲ The system shall provide a mechanism to monitor the status and relative health of the logging infrastructure.

➲ The system shall have the capability to drag and drop building of custom queries & reports.

➲ The system shall be capable of operating at a sustained 3000 EPS per collection device. The system shall provide the ability to scale to higher event rates by adding multiple collection devices.

➲ The system shall have the capability for updates delivered and applied via an update service provided by the vendor to keep the system up to date. This includes the agents, and it should be pushed centrally without having to reinstall the agents.

➲ The system shall have a secure and preferably embedded log repository to store logs that does not require separate database expertise to administer and manage.

4.11. Software

The software shall include a package consisting of computer operating system software, diagnostic, testing, development, and support software, including software to manage and safeguard security keys for SC and software for the generation and modification of report contents and presentation.

Security features shall be incorporated to prevent tampering with any data, programs, or other facilities of the Cloud Computing System and central control center.

The service provider shall provide inventory / asset management and tracking tools for the management of all devices supplied.

All computer software documentation for the Cloud Computing System and Central Control Centre including workstations shall be provided by the service provider. Necessary technical information, concerning hardware, software and firmware including system architecture, shall be provided to OSRTC by the service provider upon full deployment of the system.

Scope of software includes full functional, Control Centre hardware (data on cloud), AVLS, PIS as mentioned in this document. The service provider shall provide asset / inventory management system to manage hardware installed.

4.11.1. Configuration Data Management

Configuration data (CD) is the information transmitted from data center i.e., Cloud Computing System to each Bus which as a minimum package shall contain:

➲ Equipment Operations parameters,

➲ Fare table, SC configuration parameters (Add Value etc.)

➲ Blacklist

➲ Application updates

The Cloud Computing System shall be capable of checking and handling exceptions, missing, duplicate, delayed and fabricated data. The system shall be able to track the continuity of all types of data of system devices in case the above problems occur.

The CD Parameters shall have an effective date and time which may be any time in the future such that they are applied with immediate effect. If the effective date and time is set in the future, these parameters shall take effect on the specified date and time without further operator intervention. However, there shall only be one current CD parameter list in the system and the system shall ensure that only one version of parameters takes effect in the system at any one time. Once a version of the CD parameters is deployed, it shall be locked to prevent any modification.

The system shall allow only authorized staff to maintain parameters. A facility shall be provided as part of the Cloud Computing System whereby the operational parameters can be modified and once verified and authorized can be transmitted to AFC Systems for implementation at a date and time to be specified. It shall be possible to use back-up media to allow for a change in operational parameters to be implemented if the communication links are down.

Parameters shall be grouped in files according to the different levels of validation required such that, for example, device override parameters can be sent separately from fare tables and without the same level of validation. The system shall allow CD parameters to be highly directive to the level of individual devices by the device ID and IP address.

The CD parameters shall be communication media independent. It shall be able to send via WAN/Wi-Fi/LAN or via GPRS connections so that items like blacklist/action list can be sent immediately.

The Configuration database shall be provided with a reporting tool to produce reports of various parameters and groups of parameters set on the system, sub-systems, and devices.

4.11.2. Data Storage

The design of the database system shall be arranged to keep track of all valid SC in circulation. This information shall aid in reporting any abnormal usage of stored value or trips and in providing refunds for corrupted SC.

The database system shall satisfy the following requirements:

- ✓ Full-function RDBMS to Support complicated data structure will be deployed, multi-user, multiprocessing, large capacity operation, offer data integration, data recovery and security, support parallel processing, provide disk mirroring functions, Authority control shall be independent of that of the operating system and offer multilevel security management of database.
- ✓ Data storage capacity shall be sufficient to maintain 12 months transaction data available on line for ad hoc report generation and other investigations. The volume of data to be calculated for this requirement shall assume 500,000 transactions per day. The database shall be easily expanded to handle double the transaction over the next five years.
- ✓ To maximize the utilization of the disk space of the system, system data shall undergo a regular housekeeping process. Housekeeping shall cover the files created by the CCS and the files related to each subsystem. Any outdated or invalid files shall be archived. Duplicated records in the database and records where only the latest data needs to be retained shall be merged and archived.
- ✓ The system shall be able to backup and recovery data according to different modes and periods of backup required based on their criticality and data volume. The system shall have the functionality to backup and recover all key data (usage data, system data) and files.

4.11.3. Data Centre or Cloud Computing System Security

- ✓ The Cloud Computing System shall implement security systems to manage equipment authentication and administer the control over authority given to administrators of the operating system and others. It shall also manage the operating authority of SC devices at Terminal.
- ✓ A stand alone, highly protected, access control system shall control access to every part of the system to the authorized personnel.
- ✓ Card security shall take the form of CST keys downloaded to the AFC devices in the form of a Software Security Module.

4.11.4. Clock Management

- ✓ The Central Control System shall obtain the standard date and time and synchronize its clock automatically from OSRTC or its designated master clock system. The Cloud Computing System shall synchronize its clock at least once every 15 minutes. If the clock is not synchronous to the standard time, the correction shall be completed in one second.
- ✓ The clock information shall be downloaded to all AFC equipment's and all SC devices. When the clock time of an AFC component or SC device is different to the downloaded clock time, the device's clock shall be corrected automatically to the downloaded clock time. The correction shall not happen with the trip of a bus to avoid incomplete transactions due to time variation.
- ✓ When the hosts or the SC devices of the system are restarted, they shall be able to download or receive the clock data and synchronize their own clock automatically.

4.11.5. Reports

The system as a minimum shall be delivered with capability to generate following reports, a comprehensive list of reports further than the mentioned below shall be finalized at the time of requirement finalization stage:

- ➲ Conductor / Driver Login reports for Day, week, month
- ➲ Non-Compliance issues of different driver / conductors for the shift
- ➲ Trip summary.
- ➲ Bus Equipment Fault Summary
- ➲ Hourly Bus Usage Summary
- ➲ Total Commuters and revenue per Route, per Bus, per shift
- ➲ Revenues collected on same bus, same route, same trips by different Conductors.
- ➲ ROI route wise, trip wise, shift wise.
- ➲ Passengers boarding bus at a Bus stop – Time of day.
- ➲ Daily pass usage and its ROI for the passes validated.
- ➲ Student pass usage and the Cost of the subsidy that must be refunded by Government- daily, weekly, monthly, yearly.
- ➲ Origin – Destination
- ➲ SC Bus Usage by Route Number
- ➲ Test Card Usage by route Number

- OSRTC employees' usage of services
- Bus Service Disruption
- En-route Ticket issue Summary
- Boarding and Alighting Service
- Boarding and Alighting statistics
- Passenger KMS analysis per trip configurable by the user
- Bus Rides and Revenue Statistics by Fare Code
- Bus Equipment Transactions
- Bus Faults Per Transactions Processed by Device
- Cash Revenues as per OSRTC MIS
- SCs not used for the week, Month.
- Bus Equipment Fault Summary.
- Half-Hourly Bus Usage Summary.
- Total Patronage
- Bus Patronage and Revenue Statistics by Service Number
- Bus Service Revenue and Passenger Statistics Summary
- Boarding Ride Bus Stop
- Summary of Bus Passengers Boarding by Service Number
- System, Depot, Devices, BTT CD parameters set current and pending future CD sets.
- Transfer Statistics

The above state reports are only indicative, the actual list could be exhaustive based on OSRTC's requirements.

The Service provider shall provide OSRTC with a graphical dashboard to have a visual view of all / some key reports/ parameters enabling quick decision making.

Dashboard and Reporting Requirement

The list of reports given below is a partial list and is being provided for the sake of understanding from the perspective of providing insight into the type of solution required to meet OSRTC's business process requirement.

List of Daily Reports needed for the service performance monitoring: Category- Bus Maintenance and Availability

- The system shall compute trends and projections from data.
- Bus Availability
- How many buses are available in the depot at the Bus Breakdowns
- How many buses are in the workshop for repairs, how many buses breakdown during while in service? When multiple routes are operations, this information will be needed per individual route as well.
- Bus kilometres between two breakdowns of same bus (individual bus wise)

- Bus Maintenance
- Individual Bus report consists of preventive maintenance and all other work done on that bus with kilometres.
- Schedule Adherence of individual trip of bus
- Scheduled adherence report based on published schedule and actual schedule. Ability to sort the report by the operator by the trip will be useful.
- Operational Issues on Field: Bus bunching etc.
- Incident reports to be generated based on information gathered by the control room daily. These reports should have bus number, trip number, operator number, time of the day, type of incident.
- Category: On Time Performance
- Definition of On Time Performance will be finalized in consultation with OSRTC. Time Points within individual routes will be introduced for OTP. For all OTP, need % early, % OT and % late.
- Scheduled KM by trip versus Actual KM by trip and Summary for day.
- The report will have scheduled kilometres against actual kilometre by trip and by day. When multiple routes are operational, this information will be needed per individual route as well. The report should generate missed trips or missed kilometres per individual routes.
- On Time Performance (OTP) for Individual Trip
- System and trip on time performance report for individual routes and feeder routes.
- Daily peak, base and evening performance OTP
- Cumulative daily performance OTP
- Weekdays and weekend performance OTP
- Waiting time of bus at the junction and time to clear the junction during off peak, medium peak and peak hours.
- Speed of a bus between stations
- Speed violation
- Category: Station and Passenger Information
- Arrival and departure per station by individual trip
- The report should be generated to give arrival and departure information per station for individual trips. Then for each station, the average dwell time should be calculated and measured against the total number of boarding if available.
- Using Smart Card stations by direction of route
- No of trips per day and per month
- No of trips per day and per month of individual smart card user
- Per station Revenue
- Per Bus Revenue
- Ticket Consolidation report
- Settlement report
- Data for fare and revenue shall be provided by the fare collection software provider agency.

Dashboard and Reporting Requirement to AFCS

The list of reports given below is a partial list and is being provided for the sake of understanding from the perspective of providing insight into the type of solution required to meet OSRTC's business process requirement.

List of Daily Reports needed for the service performance monitoring:

- Data for fare and revenue shall be provided by the fare collection software provider agency.
- Category: Station and Passenger Information
- Arrival and departure per station by individual trip. The report should be generated to give arrival and departure information per station for individual trips. Then for each station, the average dwell time should be calculated and measured against the total number of boarding if available.
- Using Smart Card
- Origin and destination of a trip and length of trip
- Boarding and alighting information by individual stations by direction of route
- No of trips per day and per month
- No of trips per day and per month of individual smart card user
- Per station Revenue
- Per Bus Revenue
- Ticket Consolidation report
- Consolidation report

<table>
<tr><th colspan="3">Module: Dashboard</th></tr>
<tr><th>Sr. No.</th><th>Functionality</th><th>Requirements</th></tr>
<tr><td>1</td><td>Multi Fleet System</td><td rowspan="3">1. Development of custom on-line queries for Client related to map & Transit Data – Ad-hoc Query Based System.

2. Multi-fleet systems: All-in and simultaneous management of several fleets. The sharing of resources (communications system, control center and human management resources) creates
beneficial economies of scale.

3. Dashboard-This would be a section which enables user to have a full view of all activities of the fleet on a single Console. The dashboard shall form part of the UI delivery which shows all key performance and tracking indicators enabling control center staff and management team of Client to take proactive Decision to manage Client operations in a highly efficient manner.

4. Application development and customization of screens, forms, reports and queries of data specifically includes:

• Locating a particular bus in the fleet
• Auto pan facility for tracking a particular bus</td></tr>
<tr><td>2</td><td>Information about all running and idle vehicle with following information Driver Name, Contact Number, Speed, Current Location, Schedule time to reach next destination, No. of trips till now, Current trip number, No. of Delayed trips, Current trip status</td></tr>
<tr><td>3</td><td>Route wise, Area wise and Land mark wise vehicle information</td></tr>
</table>

4	Speed violations	• Sending online messages to an individual bus or group of buses selected on a map. • Creating and editing No entry and No exit zones • Zone violation reports for both no entry and no exit zones. • Different Icons were provided for different distress messages like fire, CNG leakage etc., from various buses on the map at the control station, online. For e.g. If a bus in the fleet sends a fire message, bus under fire Icon shall be generated and flashed on the map
5	Fleet Summary	
6	Display Board: How many busses are passing from selected area or landmark?	

4.12. Helpdesk Services

The bidder shall depute staff who will be contactable via phone and mail to aid the Users and address their queries and concerns. This assistance shall be provided during the Service Hours, or upon prior request beyond the Service Hours, as per the location classification and responsibility matrix, which shall be covered in the Operations Manual provided by Bidder and duly approved by OSRTC. During all other hours, Users can leave their message via email. The requests received on email will be taken up during the next working day.

A proper escalation procedure, as mentioned in the duly approved Operational Manual, shall be followed if the problem cannot be resolved. Shared resources of operational and technical support group will provide this service at all locations. The help desk service shall serve as a single point of contact for all incidents and service requests. The service shall provide a Single Point of Contact (SPOC) and escalation / closure of incidents for the user departments. The Help desk services would be for Cloud Management and Application support across OSRTC locations. The activities shall include.

- Provide Help Desk facility during agreed service period window for reporting user department incidents / issues / problems with the ITMS Application & and any Cloud related issues.
- Provide necessary channels for reporting issues to the help desk. The incident reporting channels could be the following:
- Specific E-Mail accounts
- Telephone (Toll free)
- Implement a call logging system in line with the severity levels as per the SLAs. The Help desk shall log user and assign an incident/ call ID number. Severity shall be assigned to each call as per the SLAs.
- Creation of knowledge base on frequently asked questions to assist users in resolving basic issues themselves.
- Track each incident / call to resolution.
- Provide feedback to callers.
- Analyse the call statistics.
- Creation of knowledge base on frequently asked questions to aid users.
- Continuous monitoring of the ITMS Solution as well as the Cloud to ensure application availability as per agreed SLAs.

- Monitoring shall be done with the help of SLA monitoring tools and system logs/counters and therefore the reports and alerts can be auto generated.
- Escalate the calls, to the appropriate levels, if necessary, as per the escalation matrix agreed between the Bidder and the user department. The escalation matrix shall be developed by the Bidder in discussion with OSRTC.
- Analyse the incident / call statistics and provide monthly reports including but not limited to:
- Type of incidents / calls logged.
- Incidents / calls resolved.
- Incidents / calls open.
- Root Cause analysis of frequently occurring incidents.
- The Bidder shall provide Help Desk facility during the working hours for reporting issues. The Bidder shall provide a service desk facility and set up all necessary channels for reporting issues to help desk.
- Initiate a “Problem Management Record” or “PMR” to document service outages using a Problem Management System as stated in the approved Operational Manual.
- Update concerned Authority of OSRTC with complete and accurate system status.
- Notify OSRTC’s designated personnel of systems or equipment failures, or of an emergency, according to the Operational Documentation.
- Maintain an updated online help-desk telephone number listing in the Escalation Matrix.
- Call tracking and closure.
- Problem escalation and notify the concerned person(s) as per the contact list provided by OSRTC in case of service levels not adhered to.
- Provide detailed contact list of Help Desk Support to OSRTC.
- Receive log and dispatch or transfer calls.
- Make the guidelines for prioritization of calls and escalation procedure for approval by OSRTC.
- Prioritize problem calls as per the defined Severity Codes.
- Perform problem analysis and identify the problems.
- Arrange for on-site/off-site support for resolution of problem.
- Shall be primarily responsible for resolving third party service provider (if any) performance issues.
- Provide monthly reports to OSRTC on calls handled by Help desk.
- OSRTC will
  - Provide the contact list of all OSRTC’s personnel who will be intimated for the problem determination assistance and escalation and ensure their availability.
  - Ensure that the users are aware of the Help Desk Services and its functions.
  - Assist Bidder in resolving performance issues of third-party vendors, if so required.

4.13. Business Intelligence Platform

BI Dashboard is a modern concept that aims to leverage several modern technologies to aid dynamic MIS report and updates of ITMS, OSRTC would like to be able to get better and dynamic MIS reports and updates of each department and helps to get better and fast decision. OSRTC would like to get quality of response within minimal time. BI framework provides a support mechanism for better and dynamic updates with limited resources and thus reduces costs.

As part of the BI Dashboard infrastructure, it provides centralized BI Dashboards for key dignitaries such as commissioner and head of the departments through a Control Centre. The BI Dashboard would enable viewing maps and images of any region and allow fusing of various data thus, becoming a part of information-assimilation process in format displays for key dignitaries in governance. It would be appropriate to adopt these dashboards for high-level reviews/meets etc.

Customized Dashboard allows status monitoring and reviews on the Dashboard view. The Dashboard helps government authorities with inbuilt features like viewing various abstract- scenarios and situational awareness and display like Project Status, revenue, and many other data. The BI Dashboard serves maps, tables, text, and applications from the BI Framework. Key datasets will be used to show graphical views of statistics. Information can be displayed in tables, charts, and thematic maps.

- The proposed solution will be based on 3-tier architecture, web enabled with the data stored centrally/ distributed on server(s).
- The application will be independent of Operating System, Browser, and the database.
- The application will be open, inter-operable, highly scalable, and capable of delivering high-performance in varied field conditions.
- Component-based architecture to enable extensibility of features and functions.
- Framework choice is based on various factors including scalability, easy to upgrade etc.
- Common-logging and log4j will be used for logging purposes in the applications.
- Entire system is UTF-8 compatible including the Database and reports.
- Dashboard - Using BI Tool, user shall be able to Create, Modify, and Save Dashboard or MIS Report.
    - Accessing the Tabs in the BI Tool
    - Creating a New BI Dashboard or Changing the Criteria for an Existing Dashboard
    - Specifying the Sort Order for Columns in BI Requests
    - Add/filter column in Dashboard.
- Accessing the Dashboard in the BI Workspace - The BI tool workspace shall display the following tabs for working with a request:
    - Criteria tab- This tab provides access to the columns selected for the request and buttons to access the most common view types.
    - Results tab - This tab allows you to work with the results of the request.
    - Prompts tab - This tab allows you to create prompts to filter the request.
    - Advanced tab - This tab allows advanced users to work with the XML and logical SQL for the request.

- Each tab shall contain on-screen information and buttons to help you create, access, and manage requests. On each tab, you can pause your mouse over each button for a description of what it does.
- Visually Appealing: it shall provide at-a-glance view, with colourful reports & dashboards.
- Drag-and-drop Interface: Makes it easy for you to quickly create the reports & dashboards you need.
- Wide range of Reporting Components: Use a variety of charts, pivot tables and tabular view components to create insightful dashboards.
- Flexible Layout & Formatting: Design your dashboards to fit your desired page layout. Add rich formatted text, logos, and icons.
- Interactive Dashboards: Drill down on reports, apply filters, visually highlight data points and do much more.
- Share & Embed: Easily share dashboards to colleagues or embed them in your intranet, web applications, websites, or blogs.
- Integration: Integrated with OSRTC applications (GIS and cross link references)
- Export & Email: Export your dashboards in a variety of file formats including HTML. Email them as attachments on need or schedule them.

4.13.1. Components

- Integration: Integrated with OSRTC applications (GIS and cross link references)
- Export & Email: Export your dashboards in a variety of file formats including HTML. Email them as attachments on need or schedule them.
- Data Aggregator: - Create input for data models to combine data from different sources.
- Data Modeller: - Model the data from various sources to be consumed by dashboard components.
- Services: Serving the data models to dashboard components.
- Authentication & Authorization: - Service to define the access to the application. Services to define the authorization for various services / data models / dashboard components / configurations.
- Client Interface: - Interface to represent user driven dashboards.
- Integration
- E-Governance application
- GIS

4.13.2. Printing Options

- Component print: It is possible to print a single component from page such as Chart, Graph, Map or Gauge. A button is provided for each component which opens print dialog for its current state.
- Screen print: This option opens print dialog for entire dashboard screen containing all components.
- PDF Conversion facility

4.13.3. Security features

- Authentication: -Authorized access to application.
- Encryption support: -Data security over network w.r.t. to communication and data readability.

BI platform shall enable OSRTC to build reports from operations data to perform multi-dimensional analysis enabling to have better insight into parameters and enable OSRTC to take business decisions leading to higher operational efficiency. The tentative list of object/report are as below:

S No	Feature
1	**Business Intelligence**
1.1	The purpose of Pervasive Business Intelligence Layer is to augment the native BI capabilities of applications hosted on the data center. Almost every business application hosted on the data center will have set of reports to be used by the business users. It is expected that the level of maturity of reporting and analytics would vary across applications. Data centers will provide a pervasive business intelligence layer, which can get linked to disparate repositories and can extend the analytics capabilities of hosted applications. This will ensure a single view of business performance matrix (e.g., Cost view, revenue view, project status view etc.) is given to the business users to help them make better decisions.
1.2	The BI platform must be a comprehensive and integrated suite of Analytical Solutions designed to bring greater business insight to broadest audience of users allowing them to have web-based self-service access to relevant and actionable intelligence from relevant data sources (of which they have access to). The BI platform should consist of Managed Reporting, OLAP Analysis, Ad-hoc querying, Dash boarding, Score carding, Business Activity Monitoring, MS Office Integration as well as Mobile / Handheld delivery capabilities. All these need to be provided from a single BI platform and should be available as a web application.
1.3	The application catering to the areas of Managed Reporting, OLAP Analysis, Ad-hoc querying, Dash boarding, Score carding and Business Activity Monitoring needs to be a zero-foot print application. Zero-foot print also means no applets.
1.4	Ad Hoc Query Capability: BI Platform must provide an analytical Solution enabling a web-based ad-hoc analysis Solution where end user can interact with logical view of information creating charts, pivot tables, reports, gauges, dashboards etc.
1.5	It should have facility to save the queries and edit the same in future to derive newer queries
1.6	Should allow derived or calculated data like ratios that is not available in the data source for the purpose of comparison or analysis like Arithmetic (sum, difference, round up or down, etc.), Percentage (% difference, % total, etc.), Analytic (Max, Min, average etc.)
1.7	It should have facility to create ad hoc queries through use of simple business terms for querying the data sources

S No	Feature
1	**Business Intelligence**
1.8	It should have the ability for the business users to create their own charts and graphs based on their requirement. It should have the ability to convert a tabular report into a chart by passing the relevant parameters.
1.9	Business users should have the ability to define their own measures and calculative fields on the fly and be able to save the new columns that are created as a self-service feature and should not depend on IT to do it. The system should allow the user to save these measures and re-use them in future.
1.10	Business users should have the ability to understand the data lineage, i.e., the source of the information that they are currently looking at in the BI environment. This could either be a technical view in terms of table name, etc. or a business view.
1.11	Business users should be able to add comments, remarks on a report and other users should be able to view this comment history so that they know the justification / history.
1.12	Save and Share Capability: After end user spends time and creates, adds, deletes, changes the pivot table views, he/she should be able to save these changes and share the updated view with group of users.
1.13	Ability to export the data or report to spread sheets including graphics and to flat file.
1.14	Application should support the ability to send a section of a report to a particular group of users (i.e., bursting functionality). Should integrate with LDAP automatically.
1.15	This bursting be accomplished for both managed and ad-hoc reports
1.16	There should be a facility for an end user to select a few of the reports and mark them as “favorites”
1.17	Ability to export the reports into CSV, pdf & xls html formats
1.18	Ability to directly send the report for printing on a LAN printer / personal printer
1.19	Dashboard Capability: End users should interact with BI platform using rich, interactive, role based, easy to understand web-based dashboard providing access to live reports, prompts, charts, tickers, pivot tables and graphics.
1.20	Should integrate with an existing enterprise portal mechanism
1.21	Should allow end users to create their own dash boards via a simple drag and drop mechanism
1.22	Should allow the entire dashboard to be printed as a report
1.23	Should have pre-built dashboards and reports for the Administrator to manage and monitor the health of the application.
1.24	Should integrate with a mapping Solution / have one of its own to show geographic activity in terms of a map. Alignment with the Indian Postal Codes map is desired.
1.25	Should provide dashboard facility with visual features like Metric Dials, Graphs, etc. for display and track of metrics

S No	Feature
1	**Business Intelligence**
1.26	Multi-Channel Report Publishing Capability: BI platform should provide a scalable reporting server capable of generating richly formatted reports from multiple sources (SQL server, Oracle, Informix, Sybase, Files, XML, URL, Sybase SQL Anywhere (JDBC-ODBC bridge compliance connection)), in multiple formats (word, excel, rtf, pdf and xml) published on multiple channels (email, WebDAV, print, ftp to file server).
1.27	Should provide a visual interface driven design environment to allow the user to define the business metadata layer dimensionally or relationally
1.28	Facility to define visually: Dimensions, Levels of hierarchy, Measures, categorization
1.29	Solution shall automatically detect and suggest hierarchical structures in data sets
1.30	Solution shall automatically verify the integrity of data elements that being considered for modeling
1.31	Map physical data structures to business terms in an easy-to-use interface
1.32	Define consistent business views of the data for relational tables and OLAP cubes
1.33	Single meta data layer should be used by all the various BI features
1.34	The same modeling Solution should model the business metadata layer from both a warehouse that is in a star-schema as well as the transactional system relational tables that are not in a star-schema.
1.35	Multiple metadata views should be able to be developed and published to users. For example, a single metadata model/file should create multiple ‘views’ of the metadata for end user consumption
1.36	Solution should dynamically make suggestions/recommendations of how the metadata should be best designed. For example, the Solution should check the defined join paths to ensure there are no issues such as looped joins.
1.37	The metadata Solution should include version control capabilities
1.38	Should be able to connect to most of the OLAP cubes like SQL, MS-SQL, DB2, Oracle, Hyperion
1.39	The drill path should be based on business hierarchies that are not necessarily organized in the same manner as in the physical representation in the database. By default, when users drill down, the system must automatically drill to the next dimension/level in the business hierarchy. However, users may also select a different drill path to other hierarchies during analysis.
1.40	Alternate drill down paths should be supported. These should be created at the metadata modeling Solution.

S No	Feature
1	**Business Intelligence**
1.41	Microsoft Office Integration Capability: Given that most users would use office documents like word, excel and power point documents in day-to-day operations, the BI platform must provide an ability to embed up-to-minute application data in MS office documents while preserving security policy to access data.
1.42	Allow query and refresh of embed data within native MS applications
1.43	OLAP Analysis Capability: Ability to do ROLAP, MOLAP and HOLAP analysis, depending on the requirement, needs to be catered to by the Solution.
1.44	Maintain and monitor status of data cubes being built by users
1.45	Provide a checkpoint facility to save the data cube build status and to revert and restart from checkpoints.
1.46	Facility to perform query and analysis on the user defined cubes but not restricting query and analysis to the data cubes created by application Trends across dimensions over time evident in the fact records Drill-down across hierarchy of levels within a target dimension
1.47	Drill-across dimensions for selected records Slice and Dice of data sets
1.48	Sorting
1.49	Filtering
1.50	Should allow different levels of nesting to integrate several rows and columns of data. e.g., build analysis by geography and allow to nest analysis by entity and time within a geography
1.51	Should allow creation of logical grouping of data based on user defined criteria. e.g., pattern matches, value thresholds
1.52	Users must be able to do nesting of dimensions within the same report by drag-and-drop functionality
1.53	Asymmetric analysis and multi-grain analysis of multi-dimensional data should be supported
1.54	Score carding capability: the application needs to have the ability to build and display scorecards
1.55	Application shall provide facility to create and maintain organization hierarchy with various organization roles defined
1.56	Provide metrics and scorecard facility at a team, function, and enterprise level
1.57	Provide dashboard facility with visual features like Metric Dials, Graphs, etc. for display and track of metrics
1.58	Provide roll-up and roll-down of certain metrics across organization levels from strategic to operational.
1.59	The Solution should allow you to view and edit the cause-and-effect relationships for each metric
1.62	The Solution should allow users to easily view the history of both targets and actuals for each metric

S No	Feature
1	**Business Intelligence**
1.61	The Solution should allow us to create and track actions corresponding to each metric
1.62	The Solution should have integration with the reporting section. A report should be easily added or linked to / from a metric.
1.63	All Analytical Solutions provided in this layer (described as capabilities above) must share a common service-oriented architecture, common data access services, common analytical and calculation infrastructure, common metadata management service, common Symantec business model, common security model and common administration Solutions
1.64	The BI platform must enable the data center to have a single, consistent logical view of information across different department specific operational systems, warehouses and multi-dimensional sources. This will ensure that business user has unified view of all accessible information
1.65	The logical view of information defined above must be simple, understandable, semantically unified logical business model. This means that BI platform must provide an ability to map complex physical data structures including database tables, derived measures, OLAP cubes etc. into simple business terms.
1.66	The end user should be able to intuitively interact with BI layer using multiple delivery channels. This means end users can access relevant analysis channels like web based and mobile access.
1.67	The BI platform should provide the ability to do analysis on both operational data (OLTP systems) and historical data (Data Warehouse systems). Specifically for enabling advanced analysis on operational systems hosted on datacenter, BI platform must provide support for capabilities such as trickle feed ETL, Business Activity Monitoring, Federated data access directly from OLTP systems
1.68	The BI platform should not only focus on report collection but also provide the ability for insight driven action. This means enabling business users to navigate quickly to troubleshoot reported issues (root cause drill downs) and to act in response to business/functional events.
1.69	The BI platform must be not pluggable in any hosted data source. This means that BI layer should be able to work seamlessly with any popular data source, business application and security infrastructure
1.70	In order to ensure performance of BI platform, It must provide in built support for parallel SQL execution.

S No	Feature
1	**Business Intelligence**
1.71	In order or ensure performance of underlying database, the BI platform must be able to put a MAX cap on no of DB connections in a pool. As soon as the max number of connections in a pool is reached, the BI server should queue incoming requests. This ensures that the source database server is not overloaded.
1.72	The BI platform must provide mission critical scalability and performance with data source specific optimized request generation, optimized data access, intelligent caching and clustering support
1.73	The presentation layer of BI platform must be based on pure web-based architecture based on HTML, DHTML and JavaScript. There should be NO client downloads, no plugin's, No ActiveX controls, No Applets.
1.74	End users should be able to personalize the structure of their respective user interface including defining views, layouts and properties of individual charts, tables, and pivot tables.
1.75	Solution should be installed in minimum red hat Linux, Windows 2000, Windows 2003 server, Windows XP, IBM and HP flavors of Unix
1.76	The Solution needs to have ability to authenticate as well as authorize within the application. Based on the available infrastructure, the administrator should be able to make a choice between the two for the whole deployment.
1.77	Should have ability to integrate with LDAP / ADS / any other enterprise authentication mechanism for single sign on
1.78	Internal temporary files created on the server side should also be encrypted and secure
1.79	The Solution should support cube level, table level, row and column level as well as cell level security
1.80	Reports can be scheduled based on occurrence of a business event / business threshold being breached.
1.81	Mobile support should be enabled. Should cater to leading technologies such as Blackberry, Symbian as well as Windows Mobile.
1.82	Reports can be scheduled on basis of time

4.13.4. Interactive Visualization

- Display information in an easy-to understand format and use intuitive and interactive visualization to enable management users within OSRTC to quickly navigate, understand, and investigate data elements to make informed decisions.
- Allow users to capture and export the current display through electronic reports and indifferent printer-friendly formats, including, at a minimum, MS- Excel, PDF, and Web formats.
- Have a default configuration and landing page for each user or user-group that are editable.

- Allow multiple visual elements to be laid out on the same display.
- It shall display dashboards and reports using different visual elements including charts, maps, calendars, gauges, images, tables, visual and textual lists, and alerts as follows:
- All visual elements shall have editable titles, labels, legends, axes, icons, and colours, where applicable.
- Interactive visualization component shall display the overall aggregate status of an OSRTC's KPI with proper colour coding (green, yellow, red, or as defined by OSRTC's preferences). It will allow the user to drilldown and switch between different KPIs (e.g., KPI for average vehicle utilization, average vehicle duration, etc.)
- Display clickable contextual information related to the metrics being viewed and allows the user to drill down on contextual information as required. Charts shall support at least the following chart types:
  - Bar Charts
  - Histograms
  - Line Charts
  - Heat Maps
  - Pie Charts
  - Grids
  - Area Charts
  - Timeline Charts
  - Bubble Charts
  - Radar Charts
  - Scatter Plots
  - Doughnut Charts
  - Pyramid Charts
- Maps shall have GIS Maps extension to allow plotting different mark-ups and indications on a map view using base and spatial map layers and allow the user to zoom and pan freely through the map and be able to present heat map visualizations on GIS map data.
- Calendars shall allow the user to intuitively navigate through calendar fields, such as day, month, and year. Calendars shall allow the user to intuitively navigate through calendar fields, such as day, month, and year. Gauges shall have the look and feel of an analog gauge (needle) with configurable level markings (green, yellow, red, or as defined OSRTC's management preferences) that gives a visual display of the amount, level, and measure of defined KPI Tables shall be able to:
- Hold a large amount of data.
- Allow the user to scroll through the data in all directions.
- Freeze the header columns and rows when the user scrolls.
- Allow the user to enlarge/decrease the font.

- Visual and textual lists shall allow the user to scroll through all the available list items with smooth scrolling. Allow the user to choose the proper visual element required to display the required KPI data and allow the user to easily switch between alternative visual elements.
- Have view-management tools, allowing the user to move, reorder, enlarge, shrink, open, and close visual elements with intuitive interaction.
- Allow the user to create a new visual element based on the available visual element types and customize an existing visual element with an easy-to-use graphical interface.
- Allow the user to save any customization done on a visual element.
- Have zero-programming mashup capability that allows the user to configure queries and data mashups visually through drag-and drop functionality.
- Allow the user to drill down to display increasingly detailed data on various data elements.
- Allow intuitive visual filtering, focusing, and selection of the displayed data and information.
- Automatically update the parameters and filters of the displayed data when the user drills down through visual elements and update the other visual elements accordingly. Also, enable selection of filters through the visual elements and propagate selection to all visual elements in the dashboard.
- Allow the user to filter and sort the presented data based on several attributes including the time historical data for the current filter and selection.
- The system shall offer the capability to add new data sources easily through a GUI.
- The system shall allow the user to filter and sort the presented data based on any attribute including time.
- The system shall allow the user to filter and sort the presented data based on one or multiple attributes simultaneously.
- The system shall have mathematical capabilities to be used to manipulate data, including basic and advanced arithmetic and statistical operations.
- The system shall allow the user to filter and search through the different data sources.
- The system shall allow the user to save the current queries, filters, and selection parameters.
- The system shall have data-pivoting capabilities.
- The system shall store the report templates and generated reports.
- The system shall understand different types of structured data including numbers, percentages, fractions, general text, coordinates, and objects.
- The system shall have the ability to mashup different types of data from multiple sources with automatic detection of relationships between the data components and an option to manually select the required relationship.
- The system shall run mathematical and statistical operations on available data.
- The system shall compute trends and projections from data series.

4.13.5. Dashboard and reporting requirements for ITMS

The list of reports given below is a partial list and is being provided for the sake of understanding from the perspective of providing insight to the type of solution required to meet OSRTC's business process requirement.

List of Daily Reports needed for the service performance monitoring.

- Category: Bus Maintenance and Availability
- Bus Availability: How many buses are available in the depot at the beginning of the shift daily?
- Bus Breakdowns: How many buses are in the workshop for repairs, how many buses breakdown while in service? When multiple routes are operations, this information will be needed per individual route as well.
- Bus kilometres between two breakdowns of same bus (individual bus wise)
- Bus Maintenance: Individual Bus report consists of preventive maintenance and all other work done on that bus with kilometres.
- Schedule Adherence of individual trip of bus: Scheduled adherence report based on published schedule and actual schedule. Ability to sort the report by the operator by the trip will be useful.
- Operational Issues on Field: Bus bunching, rowdy crowd etc., Incident reports to be generated based on information gathered by the control room daily. These reports should have bus number, trip number, operator number, time of the day, type of incident.
- Category: On Time Performance will be finalized in consultation with OSRTC. Time Points within individual routes will be introduced for OTP. For all OTP, need % early, % OT and % late.
- Scheduled KM by trip versus Actual KM by trip and Summary for day.
- The report will have scheduled kilometres against actual kilometre by trip and by day. When multiple routes are operational, this information will be needed per individual route as well. The report should generate missed trips or missed kilometres per individual routes.
- On Time Performance (OTP) for Individual Trip
- System and trip on time performance report for individual routes and feeder routes.
- Daily peak, base and evening performance OTP
- Cumulative daily performance OTP
- Weekdays and weekend performance OTP
- Waiting time of bus at the junction and time to clear the junction during off peak, medium peak and peak hours.
- Speed of a bus between stops
- Speed violation
- Category: Bus Stop and Passenger Information
- Arrival and departure per Stop/terminal by individual trip. The report should be generated to give arrival and departure information per Bus stop / terminal for individual trips. Then for each Stop/ terminal, the average dwell time should be calculated and measured against the total number of boarding if available.
- Using Smart Card & Cash
- Origin and destination of a trip and length of trip
- Boarding and alighting information by individual Stops by direction of route No of trips per day and per month
- No of trips per day and per month of individual smart card user

- Per Bus Revenue
- Ticket Consolidation report Settlement report
- Transit Performance Measures

Service Offered /Utilization		
1	Average Daily Ridership	Total no. of passengers travelled in a month / No. of days
2	Total Monthly Ridership	Total no. of passengers travelled in a month
3	Average Trip Length	Total of (Passenger * kilometers travelled) in a day / Total passengers travelled in a day
	Weekday	
	Weekend	
4	Vehicles operated in Maximum Service / day	Total no. of buses operated during peak hours
5	Vehicle utilization / day	Total kilometers travelled by a bus in a day
Economics		
6	Passenger / revenue km	Total passengers travelled in a bus / total revenue kilometer of buses in a month
7	Fares / revenue km	Total fare collection in a month / total revenue kilometer of buses in a month
8	Vehicle Operating expenses / revenue km	As per contract
9	Operating Ratio	cost per bus / earning per bus
10	Staff /bus ratio	
Availability		
11	Service Coverage	As per the corridor in operation
12	Frequency of buses	
	During Peak Medium Peak	
	During off peak	
13	Hours of Service	No. of operational hours of OSRTC Bus
14	Average Waiting Time for users	
Convenience		
15	Passengers/trip	Total no. of passengers in a day / total no. of trips of buses in a day
	During peak hours	
	During off peak hours	
16	Dwell Time	Avg. dwell time of buses at bus stops
17	Load factor	(Passenger-km / capacity-km) * 100

18	Reliability	Inverse of (Breakdown/million KM)
Vehicular Capacity		
19	Bus Capacity	Designed capacity of bus
20	Bus lane Capacity	Passengers in peak hour peak direction
21	Volume–to–capacity ratio	
Speed/Delay		
22	Average Travel Speed of BUS	Average travel speed of bus during peak hours
23	Average Travel Speed of personal vehicles	
24	Signalized intersection delay of Bus	

4.13.6. Data Conversion, cleaning, and Migration

The Bidder shall perform the data conversion, digitization, cleansing and migration from manual and/or the existing legacy systems to the RDBMS implemented for proposed ITMS. The Data Conversion and Migration to be performed by the Bidder shall be preceded by an appropriate Data Conversion and Migration strategy & methodology, prepared by Bidder, and approved by OSRTC. Though OSRTC is required to provide formal approval for the Data Conversion/ Migration Strategy, it is the ultimate responsibility of Bidder to ensure that all the data sets which are required for operationalization of the agreed user requirements are converted, cleansed, and digitized or migrated to the proposed ITMS Solution. Any corrections identified by OSRTC or any external agency, during Data Quality Assessment and Review, in the data digitized by Bidder, shall be addressed by Bidder at no additional cost to OSRTC.

At least the following activities should be carried out as part of the Data Conversion and Migration:

- Define all the specifications as per OSRTC's business requirements that are needed to populate the data into the new ITMS solution.
- Prepare uniform codification of all data sets.
- Develop the data conversion and migration templates, Forms, Scorecards, Format and facilitate the conversion of legacy and new data elements into the ITMS system.
- Identification, configuration, or development of the data upload/ download programs for automated data migration
- Create data extraction programs in the legacy system to convert into the format as required by the proposed ITMS system.
- Manual Data entry of any left out manual records in the requisite format of the proposed ITMS Solution to be done by the Bidder.
- The Bidder shall ensure data cleansing of all the data migrated from the legacy system to the new application & data validation before uploading the same to the production environment.
- Proper documentation of the data conversion / upload
- Bidder shall ensure that data conversion and migration is complete in all respects on time so that all the requirements of system implementation are fulfilled.

4.13.7. Testing of ITMS Solution

The Bidder shall design the Testing strategy in line with the Requirement Traceability Matrix, FRS, SRS, Test Cases and conduct testing of various components of the ITMS configured/ customized for OSRTC. The ITMS testing shall at least include Unit Testing, System Testing, Integration Testing, Performance Testing, User Acceptance Testing (UAT), Regression Testing, Stress and Load Testing, Vulnerability Testing, Penetration Testing.

The Bidder shall obtain the sign-off from OSRTC on testing approach and plan (inclusive of Test cases and Test Scripts). The Bidder shall perform the testing of the solution based on the approved test plan, document the results, and fix the bugs found during the testing.

Though OSRTC is required to provide formal approval for the test plan, it is the ultimate responsibility of the Bidder to ensure that the product delivered meets all the requirements of the ITMS implementation specified by OSRTC in this bidding document.

At least the following activities shall be carried out by the Bidder as part of the Application Software testing:

- The Bidder shall prepare the solution testing procedure for conducting test on various modules of the ITMS solution including the Test cases. The software testing shall include Unit Testing, System Integration Testing, User Acceptance testing, Performance Testing (Full Load/ Stress Test), Integrity Testing, Security & Access Control Testing etc.
- The Bidder shall obtain the sign-off from OSRTC on the testing approach and plan.
- The Bidder shall demonstrate to OSRTC that the solution meets all the functional & technical requirements as per the RFP including the To-Be process document as well as the requirements finalized in FRS and SRS documents.
- The Bidder shall test the integration of the cross-function modules as well as the external applications and cloud-based infra testing from seamless integration & accessibility point of view, based on the approved testing procedure.
- On successful completion of the Integration test, the Bidder shall conduct the Full load/ Stress test using suitable tools in accordance with the approved test plan. These tools have to be provided by Bidder and the results/ reports have to be shared with OSRTC.
- The Bidder shall provide and ensure all the necessary support for the conduct of the User Acceptance test by the identified business & technical users of OSRTC who are responsible for day-to-day operations of the functions automated through the ITMS solution. The Bidder shall share the test cases and demonstrate the testing procedure to the identified employees.
- The Bidder shall fix all the issues, bugs, errors found during the testing, document the results of the testing, and submit a report to OSRTC.

4.13.8. Quality Review and Security Audit

OSRTC shall form a team for conducting the Quality Review of the implementation of the proposed solution. This team will consist of

- Nominated employees of OSRTC
- Project management consultant
- Representative of ITMS OEM (To be arranged by the Bidder)
- Quality control supervisor of Bidder

- The core responsibility of the quality review team will be to perform continuous quality checks, and validation & verification of On-going solution deployment.
- The Bidder is also required to conduct software and System Testing of the entire IT Infrastructure (Software and Hardware) as part of final acceptance that will cover the below mentioned.
- Software Testing & Assessment
- Software Process Assessment
- Information Security Testing and assessment

The Audit should be performed for all critical project components but not limited to Integrated Platform, Security Platform, Software, Hardware, and Infrastructure. The detailed scope of audit will be finalized at the time of finalization of preparation of test cases. Post that, a yearly Security audit shall be arranged to be carried out by the Bidder through a Cert-In empaneled vendor. Upon successful completion of audit, bidder is required to share the Audit Completion certificate with adequate validity along with copies of all communication, written or otherwise, issues list, bug report etc. and corrective/ compliance measures taken by SI taken thereof on the Audit observations. It will be the responsibility of the Bidder to ensure that all the vulnerabilities and issues reported in the audit are promptly resolved and the resolution document is submitted to OSRTC and Security agency to show the compliance.

4.13.9. Cloud hosting and Integration

It is the responsibility of the Bidder to provide Cloud services such as compute, storage, software, supporting IT components via a Cloud Service Provider (CSP) required at the Data Centre/ DR as part of this bidding document.

It should be noted that the Bidder is expected to procure Cloud hosting services to run the application and network as per the requirement of the RFP documents including the SLA. In case, it is identified that certain components are required but not quoted by the Supplier, he will procure the same free of cost. The Bidder shall note that the specification provided is the minimum requirement and the Bidder shall procure better equipment if it is required to meet the service levels mentioned in the RFP.

- All the software used for OSRTC shall be licensed to OSRTC and will be the property of OSRTC. The licenses shall be perpetual.
- All the data created/captured under this project shall also be the property of the OSRTC.

Cloud Service Provider (CSP) engaged by System Integrator (SI):

System Integrator (SI) shall propose a suitable cloud enabled DC environment with security features and specifications. System Integrator (SI) shall select Ministry of Electronics and Information Technology, Government of India or Electronics & Information Technology Department, Government of Odisha approved Cloud Service Provider (CSP) with following requirement:

- CSP engaged by the system integrator (SI) shall host, deploy and operationalize the IT System Solutions as decided by the OSRTC.
- The DR/BCP setup configuration is required to be completed within the stipulated time as specified by OSRTC.
- New portal /web application to be setup in a primary DC and DR.
- Migration of portal/ web application from the production setup to new hardware setup for both primary and DR (if any).

- Resolve all technical issues / queries faced by portal / web application users.
- Send Daily status reports and Ad hoc reports as required by the Purchaser.
- Provide web portal / application maintenance support 24 X 7 X 365 days.
- SI shall ensure that the portal/ application operations are secure and free from cyber-attacks, 24 X 7 proactive monitoring, protection against hacking and cyber-crimes. Thus, to provide “Safe to Host” certificate initially and then at periodic intervals.
- Provide highly secured, managed, Uptime / compliant Data Centre Core Infrastructure covering the operational, computing infrastructure consisting of Hardware (Servers, Routers, Switches, and Networking Equipment), Operating Systems and associated Software (as middleware / application server software, database etc.).
- The proposed cloud solution should have features like expansion, scale up or scale out, horizontal & vertical scaling, upgrade the resources (virtual) including but not limited to Processors, Memory, Storage, Internet bandwidth, on the fly. CSP needs to comply withthese specifications and quantities mentioned in here. This specification and quantity are minimum as required for the scope of work mentioned in this RFP. However, CSP at theirinterpretations can propose infrastructure over and above this minimum specification as mentioned in this RFP.
- The DC shall be equipped with state-of-the art physical, logical and network security solutions, appliances and equipment including surveillance, monitoring and management platforms and should be able to be monitored by a monitoring tool with facility to raise alerts .
- The DC shall be physically located in Odisha / India. The CSP must provide self-certification in this regard.
- Ensure adequate Internet Bandwidth for all portals / websites /applications hosted in the DC with SLA for availability, accessibility, security and response time and latency. The bidder should propose DC own IP address and have multiple upstream providers so that ifconnectivity from either service provider goes down, redundancy is maintained.
- The CSP shall provide the tool to monitor the infrastructure proposed comprising of resource utilization of all the servers, storage, network devices, bandwidth, and facility to monitor the private cloud environment using the same console as that of monitoring tool.
- Provide DC Operations and Management Services in 24x7x365 days throughout the contract period of the SI.
- Provide 9x6 (9 hrs. x 6 days) rapid customer support to users/ stakeholders via email and telephone. This would primarily involve support on integration issues, on-boarding the portal, data requirements etc. In case of emergency / exception Bidder may be required to extend support over and above this support window.
- OSRTC and its appointed third-party auditors may visit the CSP’s DC /BCP for auditing. The CSP shall aid and furnish the relevant information requested by the auditors.
- Content management of the website will be managed and monitored by the System Integrator.
- No freeware software to be used unless authorized by OSRTC and its associated TPAs.
- Engaged CSP by SI should provide a declaration of data and data backup being maintained must reside in India.

Technical Requirements

- OSRTC intends to avail itself of a managed cloud preferably for hosting “the Portal and its

applications" at the CSP's DC/ BCP.

- The DC shall be at least an Uptime providing 99.98% services availability SLAs.
- The DC shall be well equipped with physical, logical, network and infrastructure security solutions, access protection systems including physical access control, and shall maintain the logs of the access.
- The DC shall be well equipped with intrusion detection & protection systems, firewalls, system management solutions & tools, back-up & restore solutions, monitoring tools, network load balancer for applicable servers and network layer security amongst others.
- The DC shall have the ability to scale up or down the servers/ compute resources on-demand/ as desired without significant down time.
- The computer infrastructure shall include the virtual machines, operating systems, application servers, database server, anti-virus solutions and system management & back- up agents.
- The cloud should have following capabilities:
  a) All the virtual machines should be auto scalable in terms of RAM and CPU.
  b) The cloud platform should be intelligent enough to predict incoming load and assign resources to virtual machines dynamically without rebooting the system.
  c) Cloud platform should always allocate automatically resources against running load to handle sudden spikes.
  d) The cloud platform should provide high availability across virtual machines so that even if any host goes down, all guest virtual machines should be migrated to another host automatically.
  e) Cloud platform should support horizontal load balancing along with vertical.
  f) Cloud provider should give a dashboard of all virtual machines to monitor allocated and used resources by the portal application.
  g) Cloud dashboards should allow the generation of reports for trend analysis of system usage.
  h) The OSRTC team should be able to get console access of any virtual machines if require.
  i) There should be provision to generate historical reports of resources utilization.
  j) There should be an admin panel to create, delete, start, stop, and copy virtual machines.
  k) There should be provision to take snapshots of machines so that working images of testing/quality machines can be taken.

DR and BCP

a) CSP would be responsible for Disaster Recovery Services to ensure business continuity of operations in the event of failure of primary DC and meet the RPO and RTO requirements.
b) RPO should be less than or equal to 15 minutes and RTO shall be less than or equal to 4 hours.
c) However, during the change from Primary DC to DR or vice-versa (regular planned changes), there should not be any data loss.
d) There shall be asynchronous replication of data between Primary DC and DR and the CSP will be responsible for sizing and providing the DC-DR replication link to meet the RTO and the RPO requirements.

e) During normal operations, Primary DC will serve the requests. The Disaster Recovery Site will not be performing any work but will remain on standby. During this period, the computer environment for the application in DR shall be available but with the minimum possible computer resources required for a functional DR as per the solution offered. The application environment shall be installed and ready for use. DR Database Storage shall be replicatedon an ongoing basis and shall be available in full (100% of the PDC) as per designed RTO/RPO and replication strategy. The storage should be 100% of the capacity of the Primary Data Centre site. This requirement could be carried out manually subject to meeting RPO/RTO requirements.

f) In the event of a site failover or switchover, DR site will take over the active role, and all requests should be routed through DR site. The pre-requisite to route request to DR should be articulated properly and shared by service provider.

g) Whenever there is failover from primary DC to secondary (DR), computer environment for the application at DR site shall be equivalent to DC including all the security features and components of DC, without the failover components. Development/test/quality environment will not be required at DR site.

h) The installed application instance and the database shall be usable, and the same SLAs as DC shall be provided.

i) The bandwidth at the DR shall be scaled up to the level of Data Centre when DR is activated.

j) The CSP shall conduct live DR drill for two days at the interval of every six months of operation wherein the Primary DC has to be deactivated and complete operations shall be carried out from the DR Site. However, during the change from DC to DR or vice-versa (regular planned changes), there should not be any data loss. The pre-requisite of DR drill should be carried out by CSP and OCAC jointly. Certificate for DR drill should be submittedto OCAC for compliance.

k) The SI shall clearly define the procedure for announcing DR based on the proposed DR solution. The SI shall also clearly specify the situations in which disaster shall be announced along with the implications of disaster and the time frame required for migratingto DR. The SI shall plan all the activities to be carried out during the Disaster Drill and issue a notice to the OSRTC at least two weeks before such drill.

l) The disaster recovery plan needs to be provided by the service provider which needs to be updated half-yearly.

m) The service provider should offer dashboards to monitor RPO and RTO.

n) Any lag in data replication should be clearly visible in dashboard and alerts of same shouldbe sent to respective authorities.

Penalty for breach in DR:

Sl. No.	Parameter	Target	Penalty
1	RTO	4 hours	Rs. 10,000 per additional hour of delay subject to a maximum delay of 10 hours.
2	RPO	30 Minutes	Rs. 10,000 per additional block of 30 minutes subject to a maximum delay of 5 hours.

Sl. No.	Parameter	Target	Penalty
3	Live Drill	To be conducted every 6 months Successful switch over and operation of application	Rs. 1000 for delay of each week, subject to a maximum of 5 weeks delay.

Compatibility Requirements

a) SI must ensure that the virtual machine format is compatible with other cloud providers.

b) SI should be able to export the virtual machine from other Service provider cloud and use that anywhere i.e., in different CSP.

c) SI should import cloud VM template from other cloud providers.

d) SI should ensure connectivity to and from cloud resources of the Purchaser is allowed to/from other cloud service providers if required and approved by the Purchaser.

Cloud Network Requirement

a) Engaged CSP by SI must ensure that cloud virtual machine of the Purchaser is into separate network tenant and virtual LAN.

b) Engaged CSP by SI must ensure that cloud virtual machines are having private IP network assigned tocloud VM.

c) Engaged CSP by SI must ensure that all the cloud VMs are in same network segment (VLAN) even if theyare spread across multi-DC of CSP.

d) Engaged CSP by SI should ensure that clouds VMs are having Internet and virtual network interface cards.

e) Engaged CSP by SI should ensure that Internet vNIC card has minimum 1 Gbps network connectivity and service vNIC card is on minimum 10 Gbps for better internal communication.

f) In case of scalability like horizontal scalability, the Service provider should ensure that additional requirement of network is provisioned automatically of same network segment.

g) Engaged CSP by SI must ensure that public IP address of cloud VMs remains same even if cloud VM getsmigrated to another DC due to any incident.

h) Engaged CSP by SI must ensure that public IP address of cloud VMs remains same even if cloud VM network is being served from multiple CSP DC.

i) Engaged CSP by SI must ensure that the public network provisioned for cloud VMs is redundant at every point.

j) Engaged CSP by SI must ensure that clouds VMs are accessible from the Purchaser private network.

k) Engaged CSP by SI must ensure that there is console access to cloud VMs, if the Purchaser requires accessing it.

l) Engaged CSP by SI should ensure that cloud VM network is IPV6 enabled and all public facing devices are able to receive and transmit IPV6 data in addition to IPV4.

m) Engaged CSP by SI should have provision of dedicated virtual links for data replication between their multiple DC to provide secure data replication for DR services.

n) Engaged CSP by SI should ensure use of appropriate load balancers for network request

distribution across multiple cloud VMs.

Backup Services

a) CSP must provide backup of cloud resources. Backups should be maintained at both off-site and on-site locations in secure fire proof and environmentally controlled environments so that the backup media are not harmed.

b) CSP should perform backup and restore management in coordination with the OSRTC & procedures for backup and restore, including performance of daily, weekly, monthly, quarterly and annual backup functions (full volume and incremental) for data and software maintained on the servers and storage systems using Enterprise Backup Solution.

c) Backup and restoration of Operating System, application, databases and file system etc. in accordance with defined process / procedure / policy.

d) Monitoring and enhancement of the performance of scheduled backups, schedule regular testing of backups and ensure adherence to related retention policies.

e) Ensuring prompt execution of on-demand backups & restoration of volumes, files and database applications whenever required.

f) Real-time monitoring, log maintenance and reporting of backup status on a regular basis. Prompt problem resolution in case of failures in the backup processes.

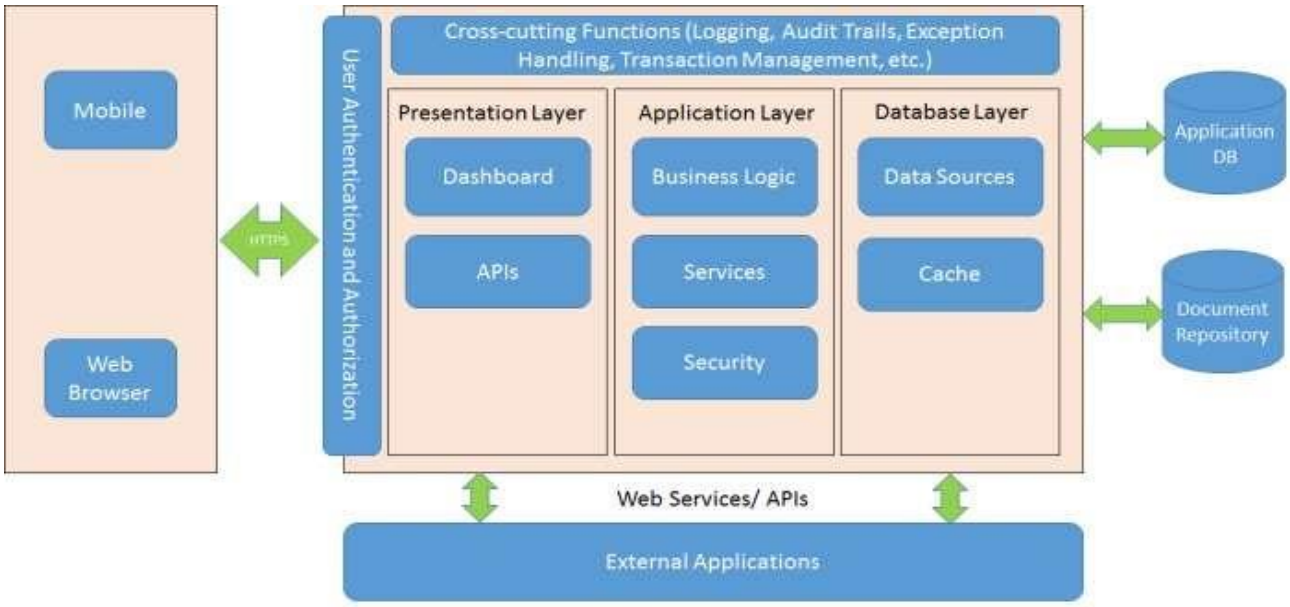
g) Media management includes, but not limited to, tagging, cross-referencing, storing (both on-site and off-site), logging, testing, and vaulting in fire proof cabinets if applicable.

h) Generating and sharing all required reports.

4.14. Human Resource Management System

HRMS (Human Resource Management System) software shall enable the management of several HR functions using information technology. HRMS aims to improve the productivity and efficiency of the business through the automation of manual and repetitive tasks.

4.14.1. Indicative HRMS Solution Architecture



Various layers of the HRMS application architecture are described as below:

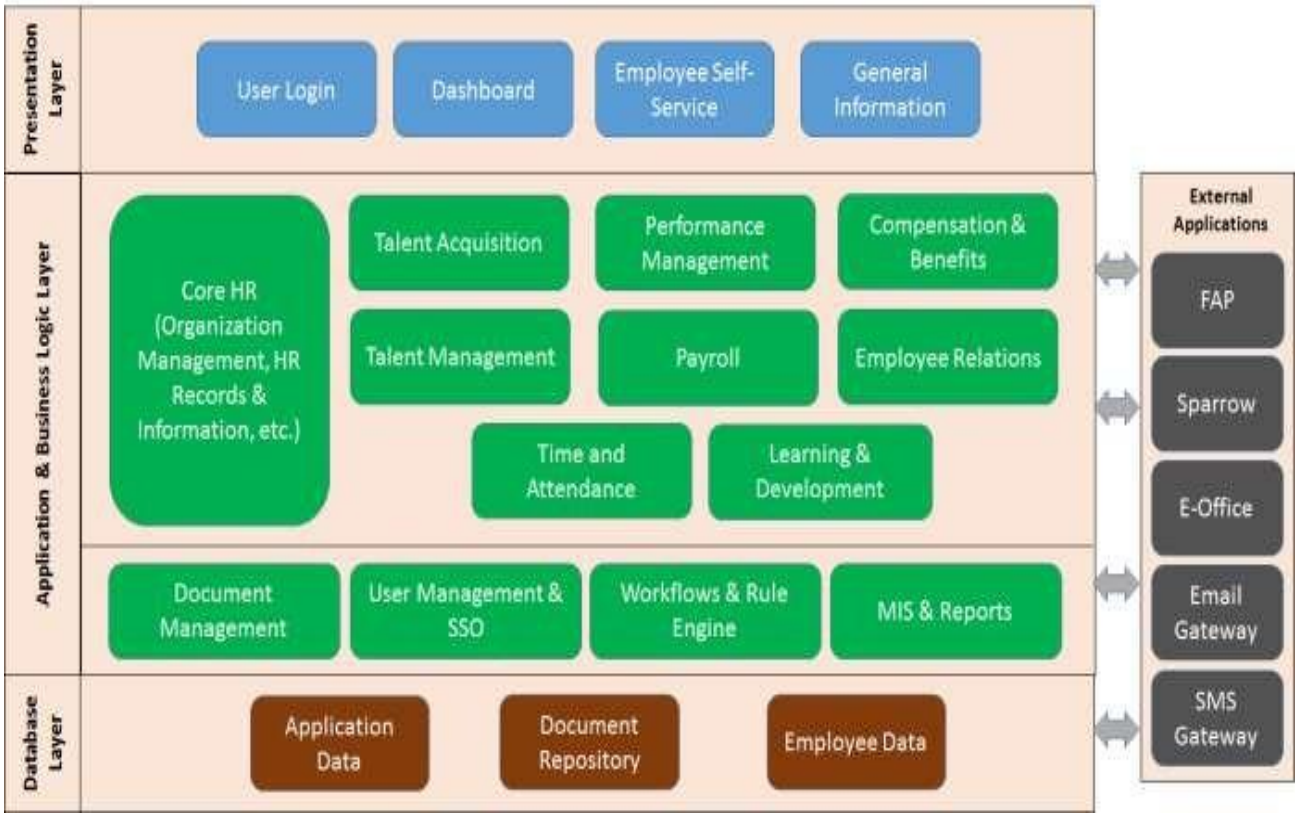
i. **Client:** HRMS Application for OSRTC should be browser-based application and should run on all major web browsers (such as Internet Explorer, Mozilla Firefox, Safari, Opera, etc.). Web browsers should be compatible with any mobile device including Android, iOS, etc.

ii. **Presentation Layer:** Presentation Layer should enforce uniform header, footer and standard side bar items and navigation in each screen to maintain uniform look and feel of the data. The interface of the HRMS application should be user-friendly and easy to operate as the users shall also include Category-IV employees.

iii. **Business Layer:** Business Layer should implement the process flow and logic that drives the business functionality. Inter-operable and Open Standard/protocols like web enabled services, APIs. This layer should also give functionality for data exchange using web-enabled services-based component or database synchronization with external agency. The framework should have provision to keeps all the user activity to be audited and logged during the business process.

iv. **Database Layer:** It has been visualized that the HRMS solution for this project would have to manage very high volumes of data and would have to store a large amount of data for long-term preservation of records at various repositories. It is mandatory for the System Integrator to ensure faster access and better manageability of this data. The System Integrator should propose technology that is powerful enough for designing and querying database models at the conceptual level, where the application is described in terms easily understood by non-technical users. The System Integrator is expected to use data models that can capture more business rules and are easy to validate and evolve. It is expected that the System Integrator shall consider mechanisms that would improve the performance of this layer.

4.14.2. Indicative HRMS Functional Architecture



The list of key process areas of the HRMS software is given in the table below:

S. No.	Key Process Areas
1.	Core HR (Organization Management, HR Records & Information, etc.)
2.	Talent Acquisition
3.	Performance Management
4.	Compensation and Benefits
5.	Employee Relations
6.	Talent Management
7.	Payroll
8.	Time and Attendance
9.	Learning & Development

In addition to the functional requirements, the HRMS application shall also contain the following functionalities as part of the overallsolution requirements.

i. **Web Portal:** The Web Portal shall provide a secure unified access point in the form of a web-based user interface.The Web Portal shall be used by end-users for logging in to the HRMS application.

ii. **Employee Self-Service:** The employee self-service shall allow employees of OSRTC to perform functions such as apply for leaves, access payroll information, manage their personal profile, etc.

iii. **Directory Services:** Directory services shall be able to define centralized authentication & authorization mechanisms for all network users. These services shall authenticate OSRTC users and find out user specific privileges. LDAP (Lightweight Directory Access Protocol)

is an Internet protocol that end-users use to look up information from a server. User password validation shall be done from LDAP. Authentication should be conducted using the standards-based LDAP meta-directory server. The user directory is capable of providing a unified view of all user profiles.

iv. **Web Application Services:** The Web Application Services would be a container to manage the presentation and application logic. It shall provide transactional integrity, scalability, and availability services. In addition, it manages the session, the requests and responses to and from its clients and resources.

v. **Indexing & Search Services:** This tool would be used for indexing and searching all the repositories of knowledge repository maintained across the portal infrastructure.

vi. **Workflow:** SOA (Service Oriented Architecture) Infrastructure would provide work-flow functionality and provide integration with SMS and email services to the concerned stakeholders.

vii. **Document Management:** Document management would provide a system for storing, access and retrieval of digitized records and files.

viii. **Bilingual Support –** Application interfaces shall be bilingual (English and Odia). The end-user should have the option to select the language in the web interface.

MIS Reporting: The following types of reports, but not limited to, are required to be generated from this sub module. The report should be generated in standard formats like PDF, XLS, DOC, DOCX, PPTX, XLSX etc.

a. *Fixed Format Reports:* Application should provide robust reporting capabilities. Application should publish reports using standard tools and the publishing engine can generate output in multiple formats including PDF, HTML, DOCX, PPTX, XLSX and similar type of formats. The output can also be delivered by email or can be printed.

b. *Ad-hoc Reports:* Application should provide business users with ad hoc query & analysis capability. Application should create new analyses from scratch or modify existing analyses in dashboard pages. Business users do not need to understand physical data storage to combine data from multiple enterprise information sources intuitively, quickly, & easily. Tools and utilities should be provided to facilitate design layout using Open office/MSOffice/Adobe Acrobat etc.

c. All reports shall be required in English language.

ix. **Provision for Digital Signature Services:** The HRMS shall have a provision to integrate with Digital Signature Certificates for generation signed documents/reports by concerned authority for enabling authenticity of the approving authority.

5. Training Room and Testing

The service provider shall set up training and test facilities adequate for training all staff of the service provider. Each staff member shall be deployed on the front end or at CCS center only after certification jointly by Service provider and OSRTC.

Service provider shall create training manuals and other necessary aids to ensure the perpetual need for training as and when required for OSRTC/Operator Personnel is required.

The training room shall be a general training room pertaining to all ITMS components and operational requirements.

5.1. Handover / Takeover

The service provider shall ensure that OSRTC is sufficiently trained, and skills are continuously upgraded to ensure complete takeover of the system at completion of the contractual agreement.

The service provider is required to impart training and necessary tools in order to take-up operations whenever necessary. The service provider shall six months before the end of the contractual period go through a process of hand-over take-over with OSRTC personnel and act in supervisory role for smooth take over.

5.2. Functional Requirements

The devices and sub-systems shall be connected to the test CCS by an independent LAN / WAN that will permit the exchange of controls and data in a similar manner to that implemented for AFCS equipment installed in Depots.

The service provider shall ensure that this equipment operate with cards which carry test keys and does not create an opportunity for fraudulent encoding of SC in the production system.

5.3. Cash Handling Requirements

Cash collection on Terminal shall responsibility of the OSRTC. OSRTC shall appoint a cash Management Company to collect the cash from respective sales locations within the system.

This sales information along with all the transaction details for the shift shall be transferred to the back end where the data is analyzed for shift operational reports and cross verification by OSRTC for transactions against cash receipts at consolidator.

5.4. Human Resources Management

There shall be a Project manager as a representative of the service provider at the time of implementation followed by an Operations manager, employed as the head of operations by the service provider, after the start of commercial operations. Project manager shall act as the single point of contact and shall be responsible for all the deliverables of this agreement. The operations manager shall be the single point of contact with OSRTC after the start of operations.

5.5. Commercial Operations and Maintenance - Bus stops, Bus Terminals, Buses

Resources for maintenance of PIS at Bus, Bus Stop and terminal, ETM, POS devices and control center shall be provided by Service Provider. The service provider shall provide the cost of such services on annuity basis, payable monthly. This should be clearly indicated in the financial proposal. The personnel shall be responsible for the smooth functioning of the BTT, ETM equipment and its connectivity to data center / CCS. They shall attend to the problems with BTTs, ETM, PIS equipment, connectivity problems and any other hardware related at Bus stop and bus terminals. Service provider personnel shall also attend to any problem with equipment on the bus installed hardware integrated by it.

At least second- and third-line maintenance shall be provided and may take the form of remote connectivity.

5.6. Lead time

The successful bidder will initiate the Project activities within a maximum period of 6 months from the time of formal award of this Project. The successful bidder shall have to set up a pilot demonstration at one bus stop with respect to the Automated Fare Collection System and Passenger

information system. They shall also install and demonstrate an Automated Vehicle Location system on one bus. This pilot demonstration shall be done within 4 Weeks from the receipt of LOA. The Project Implementation shall be done in timeline specified in Lead Time. The Lead Time for each phase/Request Order of ITMS Project shall be stipulated in discussion with the Service Provider before implementation order is given. The authorities' decision in this regard shall be final but reasonable time would be given. This will form the basis for the application of Liquidated Damages.

The service provider shall give OSRTC a clear project implementation plan within 15 days after signing the service agreement, in consultation with and to the satisfaction of OSRTC. This plan shall include details of the project implementation team and benchmarks of delivery of equipment, installation of equipment, integration and setting up of the Central Control Centre and data center at their premises (Cloud Computing System) Upon completing the set-up, the service provider shall do a test run for the entire system, remove any shortcomings and resolve any bugs in hardware, software, communication network and Central control system and have the system ready for commercial operations one month from the completion of set up.

5.7. Application and System Audit

OSRTC shall appoint a third-party auditor capable of auditing IT systems envisaged as part of ITMS implementation. The service provider shall be required to provide necessary information to the third-party auditor to facilitate testing and auditing of hardware, software and processes related to ITMS.

6. Technical Requirements: Hardware & Devices

6.1. PC / CPU

Item	Specification	
Processor	• Processor Generation: 11 and above • Number of cores per processor: 4 • Base frequency: 3.7 (GHz) • Cache: 6 MB • VRAM in case of Integrated Graphics: 128 MB	
Memory	• Type of RAM- DDR4 • RAM Size – 8GB • RAM Speed – 2666 MHz • DIMM Slots available – 2 • Populated DIMM Slots – 1	
Storage	• Total Number of Internal Bays available – 2 • Number of 2.5 inches internal Bays – 1 • Number of 3.5 inches Internal Bays -1 • Number of 2.5 Inches Internal Bays Populated – 1 • Type of Drives used to populate the Internal Bays -SSD • Number of Internal Bays populated with SSD – 1 • Capacity of each SSD (GB) - 512	
O/S	• Microsoft Windows 11 • POS Ready • WNLPOS (Linux)	
Input device	• Wired Keyboard • Optical scroll Mouse	
Port	Standard port (RS232)	1

Item	Specification	
	Power	3 (option)
	USB (3.1 / 3.0)	2 front/ 4 side
	USB	2x12V, 1x24V (option)
	Keyboard	P/S 2
	Mouse	P/S 2
	Line In/Line Out/ Mic	1/1-
	Money tray	1
	Display	1 (option)
	LAN	10/100/1000 Mbits
	Parallel port	1 (option)
Power Supply	304W with +5VDC standby, PFC, 80 Plus. Voltage in115/230VAC 1x12VDC for display 1x24VDC for printer	
Dimension	310 (W)x 295 (H) x 103 (D)	

6.2. Monitor with touch screen interface.

Item	Specification	
LCD type	19.5'' TFT-LCD	
Panel	Viewing Area	19.5"
	Resolution	1600 x 900
	Color	16.7 Mn
Video Input	VGA Signal	R/G/B Analog VGA
Control	Power	On / Off with LED Indicator
	OSD	OSD Control with "i-touch" auto scaling
Power Adaptor	Input	AC Input 100 ~ 240 V, 50 / 60 Hz
	Output	DC +12 V
Safety & EMI	FCCB, ETL, ETLC, CE, TÜV / GS, CCC	
Application	POS, Banking, ATM, IPC, TML, Web IA, Mini PC, etc.	
Optional	Touch Panel	3M Resistive (8 Wires) or ELO Resistive (5 Wires)
	Glass	Anti-Reflection Strengthen Glass
	Card Reader	300,000 Pass or 1,000,000 Pass
	Cabinet Color	White or Black

6.3. Keyboard

Wired - USB 104 or more, Etched keys, bilingual (English and Odia), compact and light weight keyboard with Indian Rupees symbol.

6.4. Mouse

Wired - USB 2 Button optical Scroll Mouse with mouse pad.

6.5. GPS Devices

- GPS devices certified by Govt. of Odisha / ORSAC / ARAI Approved / ICAT Approved AIS-140 complied.
- Device shall be capable of obtaining position information using Global Navigation Satellite System (GNSS). GNSS receiver specifications are as follows:
    - Device shall be capable for operating in L and/or S band and include support for NAVIC/IRNSS (Indian Regional Navigation Satellite System) for devices installed on or after 1st April 2018.
    - The Device shall support GAGAN, the Indian SBAS (Satellite Based Augmentation System)
    - Device shall have a position accuracy of minimum 2.5 m CEP or 6 m2 DRMS.
    - Device shall have an acquisition sensitivity of minimum (-) 148 dBm.
    - Device shall have and tracking sensitivity of minimum (-) 165 dBm.
    - Device shall have an internal antenna; however, if in case of Integrated systems with vehicle / aftermarket OEM approved kits if the fitment location prevents the internal antenna from functioning, then external antenna shall be provided.
- Device shall support standard minimum I/Os as mentioned: 4 Digital, 2 Analogue and 1 Serial Communication (e.g., RS232) for interfacing external systems (E.g., Digital input for Emergency request button interfacing).
- Device shall be capable of transmitting data to Backend Control Server (Government authorized server) via Wide Area (Mobile) Communications network (GSM/GPRS) as per Communication Protocol.
- Device shall be capable of transmitting Position, Velocity and Time (PVT data) along with heading (direction of travel) to a Backend Control Server (Government authorized server).
- The fixed frequency shall be user configurable, minimum frequency shall be 5 sec during vehicle operation and not less than 10 minutes in sleep/IGN OFF).
- Device shall be capable of transmitting data to minimum 2 different IP addresses (1 IP address for regulatory purpose (PVT data) and 1 IP address for Emergency response system other than the IP's required for Operational purpose.
- On pressing the Emergency button, the system implementing VLT function shall send emergency Alert to the configured IP address(s). In the absence of GPRS network, the emergency alert shall be sent as SMS message along with vehicle location data to configured control center number(s).
- Device shall have an internal back-up battery to support 4 hours of normal operations (to be tested for positional record transmission at a frequency of 60 sec)
- Device shall be capable of transmitting alerts to the Backend Control Server (Government authorized server) directly.
- Device shall support over the air software and configuration update.
- Device shall support basic standard configuration (Mobile communications network settings, Backend Control Server (Government authorized server) details, data frequencies, alert thresholds etc.)

- Device shall support store and forward mechanism for all type of data (periodic data and alerts) meant for backend transmission. The system shall store data in internal memory during communication network un- availability and transmit the data when the connection resumes in last infirst out (LIFO) manner. The live data shall be given higher priority for transmission than back log (stored data) at any point in time.
- The Device shall have a unique identifier for identifying the VLT device and data. The unique ID shall be stored in a read-only memory area so that it cannot be altered or overwritten by any person. The unique identifier may be Vehicle Identification number or IMEI (International Mobile Station Equipment Identity) Number.
- Device shall store/write the registration number of the vehicle in the internal nonvolatile memory.
- Device shall have an Embedded SIM.
- The device shall be designed to operate between 8VDC and 32VDC using vehicle battery input voltage range 12 /24Volts.
- Device shall have a sleep mode current ≤ 20 mA (If the function is implemented in a dedicated system/device).
- Device shall support any operational GNSS system with 12 (minimum) acquisition channels.
- The Device shall support:
    - Location on GPRS/SMS
    - Non-volatile memory to store min 40,000 positional log.
    - Configurable backup SMS facility in case of GPRS failure
    - Capability to send serving and adjacent cell ID as well as networkmeasurement report (NMR)
- The Device GNSS module shall have:
    - The capability of Hot start <5s
    - The capability of Warm start : < 30s
    - The capability of Cold start < 40 s
    - Device shall support Outputs as per NMEA 0183
    - The Device GPRS module shall have:
    - Multi slot GPRS with In - built Quad-band GPRS module/Modem.
    - GPRS class 10 or above
    - Support Embedded SIM to cater to the automotive operational requirement such as vibration, temperature and humidity and provide long life span with at least 10 years life and more than 1 million read/write cycles.
- GPRS module & SIM shall be supported.
    - SMS, Data (GPRS, TCP/IP) and
    - Support multiple network OTA switching (on-demand/automatic) capabilities.
- Device shall be dust, temperature, vibration, water splash resistant, IP 65 rated or better, tamper proof.

- The device shall be manufactured using processes as per quality management standard for automotive industries i.e., ISO/TS 16949 updated from time to time.
- Device shall support A-GPS (Assisted GPS)
- Device shall have provision of secured data transmission to the Backend Control Centre from the devices through secured channel (e.g., secured dedicated APN).
- The device shall have 3 axis accelerometer and 3 axis gyroscopes for getting the alerts on harsh breaking harsh acceleration, and rash turning.

6.6. EMV Based Electronic Ticket Issuing Machine (ETIM)

S. No	Parameter	Specifications
1	Processor	Minimum 32-bit RISC based processor – 350 Mhz or higher.
2	Operating System	Linux/ Windows/ Android Based Operating System
3	RAM	128 MB or Higher
4	FLASH Memory	256 MB or higher
5	Extendable Memory	SD/Micro SD card interface (Minimum 16 GB or higher)
6	Display	Graphic LCD minimum 128 x 64 Pixels with LED Backlight
		Capable of displaying graphic images
		8 lines x 20 characters or better
		Clear display at night and day
7	Keypad	Minimum 16 keys with LED backing lights; OR Virtual Touch Keypad in case of Android OS platform.
8	Printer	2” Thermal Printer with 50mm/sec.
		Easy paper roll loading, should support minimum 12-meter length, 60 mm diameter, 57 mm paper width thermal paper roll
		Transparent paper cover
		Paper cover open sensor
		Capability to print bar code
		Capability to print ticket in English and Hindi
9	SAM Slots	Minimum 2 SAM slots (validate E-Purse OTCs to connect with other modes) compliant to NCMC Standards

10	RTC	Inbuilt RTC with battery backup
11	GPRS Communication	In- Built Quad GPRS module / Modem
		Should support SMS, Data, GPRS, TCP/IP
12	Battery	Li-ion/Li-polymer, minimum 2400 mAH Over-charge/ over-voltage/ over-current protection
		Minimum 1000 ticket printing and minimum 14 hours operation in a single charge with real time data transfer and smart card read & write facility
		Quick recharge
13	Weight	500 g or less
14	Communication Ports	RS232C Serial Port for PC connectivity an 115K baud rate USB Port: Type A/Type Ethernet Port: 10/100/1000 Mbps
15	Security	Should support encryption standards including 3DES and AES for smart card reading/writing as well as communication with Central System
16	Operating temperature	0˚C to 50˚C
17	Contactless Smart Card Reader/Writer	Inbuilt Contactless Smart Card reader/writer – ISO 14443 Type A & B, FeliCa, entire Mifare family
18	Indications on display	Battery charge status
		GSM Signal strength
19	Audio	Beeps on keypress and transactions
20	Others	Remote Administration
		Over the air upgrade of firmware, application, configuration parameters, master data, etc. should be possible.
21	Accessories	Shoulder carry bag
		AC charger (working from 100 V to 240 V)
		Memory Device
22	ETIM Software Development Kit (SDK)	The Vendor shall provide Software Development Kit (SDK) for the ETIM firmware so that ETIM features can be developed by the SI in future as required.

		The SDK shall provide functions / Programmes / APIs to support atleast the following:
		a) Smart Cards functions
		b) Communication Device (RS232, USB, GPRS modem, Wi-Fi etc) functions
		c) Inter-process communication (IPC) functions
		d) Multitasking functions
		e) Multithreading functions
		f) Power (Battery) Management functions
		g) Internal Printer Management functions
		h) File System Management functions
		i) Clock/ Timer Management functions
		j) Beeper/ LEDs/ Buzzer Management functions
		k) Environment Variables related functions
		l) User Interface (UI) Management Related functions
23	Wireless Communication	Wi-Fi with b/g/n supports
24	Warranty	For the complete contract period
25	Language	Support multi-language display and printing, including English and Hindi
26	Mandatory Certifications	EMV Level 1 & 2 and PCI-PED V-3.x certification (Kindly refer
		CE/FCC or equivalent Certification
27	Payment Schemes	EMV and RuPay
28	Magnetic Card Readers	Triple Track (Tracks 1,2,3,), Bi-directional
29	Ingress	IP 54
30	Transaction processing time	For MM Cards & Smart cards – less than 400 ms. For QR code transaction – less than 600 ms. For Contactless CC/DC Cards – Less than 1 second.
31	Kernels	EMV level-2 and qSparc

32	GPS	(a) Input Voltage: 8-70 VDC with surge protection (b) GPS Receiver (Quectel L89) • Support IRNSS, GPS, GLONASS • Support AGPS, SBAS ranging (WAAS, EGNOS, GAGAN, MSAS) • 66 acquisition channel
		• Maximum update rate: 10 Hz (c) GPS tracking Sensitivity • Tracking – 166 dBm • Reacquisition – 162 dBm • Cold Starts – 147 dBm (d) GPS Accuracy – 2.5-meter CEP (e) Bluetooth – Compliant with 3.0 + EDR (f) GPRS Data • GPRS Class 12: max 85.6 kbps (downlink/uplink) • PBCCH support (g) Protocol – Embedded TCP/HTTP protocol (h) Jamming Detection – Yes (i) Antenna (Internal + External) – GPS & GSM high gain antenna (j) Device Working Mode • Continuous tracking • Interval tracking • Sleep mode • Deep sleep mode (k) Input/ Output • 1 digital outputs • 2 analog outputs • 4 digital inputs • 1 RS232 (Serial Communication) (l) Housing – IP 65 (m) Accelerometer – 6 Axis

6.7. Printer

S.N.	Specification
Specifications	
1	Print speed: 24 PPM in color A4
2	Resolution: 600 dpi
3	Memory (RAM): 128 MB
4	Interface: Parallel, USB and Ethernet
5	Monthly duty cycle: 80000 pages
6	Media Supported: A3, A4, Letter, Legal, Executive
7	Cable and accessories
8	Driver Software in Windows, MAC and Linux
9	Automatic Duplex Printing
10	Languages:(Built in) PCL5e, PS3
Environmental factors	
1	The unit shall be capable of being stored continuously in ambient temperature of 0-50 deg C and relative humidity of 15-90%
2	The unit shall be capable of operating continuously in ambient temperature of 10-40 deg C and relative humidity of 15-90% Parameters
Power Supply	
1	Power input to be 220-240VAC, 50Hz fitted with Indian plug
Safety Standards	
1	Should be FDA, CE, UL or BIS approved product
2	Manufacturer should have ISO certification for quality standards
3	Comprehensive warranty for 2 years

6.8. Router

S.N.	Description
Network Protocols	
1	IP Version 4 as per RFC 791
2	IP version 6 as per RFC2460, RFC 4861, RFC 4862, RFC 1981 and RFC 4443
3	Transmission Control Protocol (TCP) as per IETF RFC 793
Routing Protocols	
1	Router shall support Both static and dynamic routing using the adaptive algorithms.
2	BGP4 as per RFC 4271 and MBGP as per IETF RFC 4760 (Multiprotocol Extensions for BGP-4).
3	BGP for IPv6 as per RFC2545
4	RIP2 as per RFC 2453
5	RIPng for IPv6 as per RFC2080
6	OSPF as per RFC 2328
7	OSPF for IPv6 as per RFC2740
8	Multicast Protocol: IGMP as per RFC 3376 and PIM-SM as per RFC 4601
9	IPv6 multicast assignments shall be as per RFC2375
10	Quality of Service (QoS): • Differentiated Service Point Code (DSCP) as per RFC 3260 • PHB as per RFC 3140 and RFC 2598 • ToS Bit as per RFC 2474 and 2475.

S.N.	Description
	• VLAN Tagging as per IEEE 802.1q and IEEE 802.1p. • QoS marking for IPv6 packets shall be as per RFC2460/RFC3697
11	Encoding Long Options in the Dynamic Host configuration Protocol (DHCPv4) as per RFC 3396
12	The DHCPv6 support shall be as per RFC 3315
WAN Protocols (Subscriber access protocols)	
1	Point to Point (PPP) protocol shall be used for connecting the TCP/IP Devices to Telecom Network Point of Presence. PPP shall be supported as per RFC 1661 for 64Kbps / n x 64Kbps / E1 / E3 / DS3 interfaces
2	IPv6 over PPP shall be as per RFC 5072 for non-Ethernet interfaces
3	It shall support PPP over SONET/SDH as per RFC 2615 for STM interfaces
Physical Interface	
1	Physical Interface shall be capable of supporting one or more of the Interfaces. The speed of the connection line may vary from 64 Kbps, n x 64 Kbps to 2 Mbps, E3 (34Mbps), DS3(45Mbps), STM1(155Mbps), STM-4(622Mbps), STM-16 (2488Mps), STM-64(10Gbps), FE/GE/10GE Ethernet.
2	The Router shall support one or more out of the following LAN interfaces: • 10/100 Base Tx Ethernet Electrical as per IEEE 802.3 • 10/100/1000 Base Tx Ethernet Electrical as per IEEE 802.3
3	The Router shall be capable of extracting the receive clock from line or external interface and shall be able to use recovered clock as transmit clock
4	The Router shall support one or more of the following WAN interfaces. • x DSL • X.21 • V.36 • ISDN PRI Interface as per TEC standard No. SD /ISN-01/03 OCT 2003 • ISDN BRI Interface as per TEC standard No. SD /ISN-02/02 SEP2003 • 2G/3G Interface, (Approvals if needed shall be arranged by vendor through WPC) • 64Kbps co directional as per ITU-T G.703, V.24, V.35. • NX64Kbps interface as per ITU-T G.703, V.24, V.35 • 2048Kbps 120 Ohm balanced as per ITU-T REC.G.703 or 75ohm unbalanced, Framed or Unframed • 34Mbps as per ITU-T G.703 • 45Mbps as per ITU-T G.703, G.704, G.707, G.752 and G.824. • STM-1 Electrical as per ITU-T G.703, G.707 & shall work with equipment specified in TEC GR G/SDH-04/03 with BNC connectors. • STM-1 optical interface for Short Haul operation using Mono mode or Multimode laser diode as per Table 2/G.957. • STM-1 optical interface for Long Haul operation using Mono mode or Multimode laser diode as per Table 2/G.957. • STM-4 optical interface for Long Haul/Short Haul operation using Mono mode or Multimode laser diode as per Table 3 of ITU-T Rec G.957. • STM-16 optical interface for Long Haul/Short Haul operation using Mono mode or Multimode laser diode as per Table 4 of ITU-T Rec G.957. • STM-64 optical interface for long haul/short haul operations using Mono mode or Multimode laser diode as per Table 2 of ITU-T Rec G.693.

S.N.	Description
	• 10/100 Ethernet Electrical as per IEEE 802.3 • 10/100/1000 Ethernet Electrical Interface as per IEEE 802.3 • Fast Ethernet short Haul / long Haul Optical as per IEEE 802.3u. • Gigabit Ethernet short haul / long haul optical as per IEEE 802.3. • 10G Ethernet long haul / short haul optical as per IEEE 802.3ae.
Manageability	
1	The Router shall support manageability over the SNMP ver2 and ver3 protocols and all MIBs (Management Information Base) shall be provided
Output Jitter	
1	Output Jitter at 2048 kbps / 34Mbps network interface shall be as per ITU-T G.823
2	Output Jitter at DS3 network interface shall be as per ITU-T G.824
3	Output jitter at STM-1/STM-4/STM-16/STM-64 interface shall be as per ITU-T G.825
Jitter Tolerance	
1	Jitter Tolerance at 2048 kbps / 34Mbps network interface shall be as per ITU-T G.823
2	Jitter Tolerance at DS3 network interface shall be as per ITU-T G.824
3	Jitter Tolerance at STM-1/STM-4/STM-16/STM-64 interface shall be as per ITU-T G.825
Output Pulse Mask	
1	Pulse Mask at 2048 kbps / 34Mbps network interface shall be as per ITU-T G.703
2	Pulse Mask at DS3 network interface shall be as per ITU-T G.704
3	Pulse Mask at STM-1 electrical interface shall be as per ITU-T G.703
Return Loss	
1	Return Loss at 2048 kbps / 34Mbps network interface shall be as per ITU-T G.703
2	Return Loss at DS3 network interface shall be as per ITU-T G.704
3	Return Loss at STM-1 electrical interface shall be as per ITU-T G.703
4	AC differential input impedance of the Ethernet interfaces shall be as per IEEE 802.3

6.9. 42U Rack

S.N.	Specification
1	High quality and functional 19” OEM 42U Server Rack with required accessories along with PDUs (at least two independent PDUs and power outlets to allow separate UPS inputs)
2	The PDUs must be equipped with enough C13/C14 sockets (at least 24 and above in a single PDU) to cater the proposed solution with LED, MCB and cable to connect to 32 Amp Electrical Industrial Socket
3	Appropriate cable managers and structured cabling within the rack
4	All doors, locks and castors must be present and operational
5	Adequate numbers of IB/Cat6/Power etc. cables need to be provided within 1–2-meter length

6.10. Passenger Information Display (PID)

S.N	Parameter	Description
1	Size of displaying area (LED visible area)	960mm x 192mm or better
2	Size of glass body area	970 x 202mm (L x H) or better
3	Size of body of display	1062 x 380 x50 mm (L x H x W) or better
4	Pitch of pixels	6mm
5	Display resolution	160 (H) x 32 (V)
6	Colour	7 Colour
7	LED type	SMD PLCC-2
8	Angle of viewing	120°V, 120°H
9	Max. viewing distance	40m
10	Intensity of Light	5000 mcd
11	Line of text	•2-line in English • 2 lines in Odia / Hindi
12	Graphics	Custom graphics support
13	Display Mode	Fixed, scrolling and flashing
14	Communication to server	GPRS
15	Communication protocol	TCP/IP
16	Communication interval	Real time (configurable interval from 1s to 256s)
17	Configuration	SMS or LAN (inbuilt webserver)
18	Controller and antenna	Inbuilt in display
19	Brightness	Auto-brightness according to ambient light
20	Message for a particular PIS (can be customized)	• Bus No.: The bus route identity • Destination: The destination of route and via stops • Time: estimate time of arrival of the bus at the given bus stop in minutes
21	Maintenance	Front maintenance
22	Casing security	• Alarm string in case of casing is open. • Safety screws
23	Power supply	90 – 240V AC (inbuilt supply)
24	Powers consumption	Maximum 150W Average 50W
25	Screen protection	Antiglare UV resistant sheet
26	Body material	Powder coated aluminum
27	Environmental specifications (self-compliance)	Operating Temperature: -5 to +70°C Humidity: 5% to 95% RH, Sealing IP66
28	Type of Installation	Outdoor

6.11. Bus Stop PIS display.

S.N	Particulars	Description
	Dimensions	
1.	Cabinet size	1000 mm (L) x 700 mm (H) x 100 mm (D)
2.	Display Area	900 mm (L) x 100 mm (H) per line
3.	Character Height	100 mm

S.N	Particulars	Description
4.	Line Matrix	16 x 144
5.	Number of Lines	6 Lines / 2 Lines
6.	Pitch	6.25 mm (V) x 6.25 mm(H)
	LED Parameters	
7.	Type of LED	SMD
8.	Color	Amber Colored
9.	Intensity	Multiplexed design (4:1) with > 650 mcd at 20 mA.3000 candela per sq. meter
	Electrical Parameters	
10.	Operating Voltage	Nominal 90 V AC to 250 V AC, Single Phase 50 Hz
11.	Power Consumption	100 VA
12.	Protection	In line fuse for overcurrent.
Quality		
13.	EMI/EMC	Test complied as per – AIS 004 Part 3
14.	Ambient Environment	Operating temperature: 0°C to +55°C
15.	Humidity	5% to 95%RH
16.	Vibrations	2G
17.	Frequency	5 ~ 50 Hz and return to 5 Hz at a linear sweep period of 1 minute/ Complete sweep cycle
18.	Excursion	1.6 mm peak to peak over the specified frequency range
19.	Ingress Protection	IP 66
20.	Thermal cycling	5 Degree per minute
Display Characteristics		
21.	No. of Sides	Single sided
22.	Intensity of display	In-built, light sensor with continuously variable brightness control to enable the display intensity to change based on ambient light conditions.
23.	Viewing distance	3 ~ 30meters
24.	Character height	Character height 2 inch minimum for English and 4 inches for Odia
25.	Communication protocol GPRS2G / 3G	Communication protocol GPRS2G / 3G
26.	Controller and Antenna	Built-in
27.	USB Function	Loading of Firmware (Over boots strap) Loading of Configuration
28.	Updating of firmware	Remote on GPR Sand Locally via. USB
29.	Information to be displayed	BSD (Bus Stop Display) receives information like following as inputs from the central system, on an as –required basis: 1. System management commands (e.g., system status requests)

S.N	Particulars	Description
		2. Static display information (e.g., hours of operation and bus routes) 3. Real-time display information (e.g., current time and 3. time until arrival of next bus (es), Route No., vehicle identity, Destination, STA, ETA. 4. Service Class: Type of service like limited stop Service etc. 5. Ad-hoc information (e.g., traveler warnings, current weather conditions and advertisements)
30.	Languages Supported	English, Hindi, Odia.
31.	Character & Fonts	BSD can display a message composed of any combination of alphanumeric character fonts, punctuation symbols and full graphics. BSD minimally support the following: 1. Hindi and English characters – all as upper case letters; 2. “0” through “9” – as decimal digits 3.A blank or space. 4.Punctuation marks as follows: ! ? - ‘ ’ ” ” / ( ); 5.Special characters as follows: # & * + < >; and ` (Rupee Symbol) 6.Directional arrows and other shapes
32.	Storage capacity inside the display	The PIS has capacity to store static information (including schedules), which shall be shown if the communication link is lost and after real-time information expires. Information for 20 routes can be stored in built memory as real time data.
33.	Built in memory	Static memory in the form of Nand-flash of 8GB is provided
34.	Update of Display	Real time (configurable refresh rate)
35.	Display Schemes	Multi-phase messages, tables, fixed and scrolling text. Note: Related parameters (e.g., Multi-phase Message Transition Time, Display Line Scroll Speed) are configurable.
36.	Clock & Calendar	BSD has built in clock to show time of day clock and calendar. The time and date get synchronized on preset time interval, which is remotely configurable

S.N	Particulars	Description
37.	Diagnostics	BSD runs on-going diagnostics & stores PID – DTC codes. The same is accessible from control center. 1. Codes for display hardware 2. Codes for GPRS faults
38.	Data format	Bit map or Unicode (Multimedia content, text in Hindi, English, and Odia.
39.	Memory	Ability to retain the last message displayed in event of power failure without the message being reloaded from Controller
Structure		
40.	MS Tamper proof cabinet Powder coated.	
41.	Mounting arrangement by wall mounting on roof	

6.12. In bus PIS display

Sr. No.	Particulars- Dimensions	Description
1.	Cabinet size	912 x 180 x 53 mm
2.	Display Area	842 x 120 mm
3.	Character Height	120 mm
4.	LED Parameters	
5.	Type of LED	Dot Matrix
6.	Color	Amber Colored
7.	Wavelength	591 to 595 nm Dominant Wavelength as per AIS-012 standard
8.	Intensity	40 mCd
9.	Viewing Angle	45 Degree all around
10.	UV resistant	Yes
11.	Electrical Parameters	
12.	Operating Voltage	Nominal + 24V DC or + 12 V Optional: Extended Supply Range 9 V to 36 V DC
13.	Power Consumption	0.4 A @ 24V DC
14.	Protection	Power supply input is protected against Reverse Polarity, over voltage, Cranking voltage, Load Dump Resettable fuse inside the cabinet for over current Communication lines are protected against high voltage application and ESD
Quality		
15.	EMI/EMC	Test complied as per – AIS 004 Part 3
16.	Ambient Environment	Operating temperature: -15°C to 80°C
17.	Humidity	95% RH for +25°C/+55°C ,24 Hrs. for 6 cycles in off condition
18.	Vibrations	10g as per AIS 012
Display Characteristics		

Sr. No.	Particulars- Dimensions	Description
19.	No. of Sides	Single sided
20.	Line Matrix	16 x 112
21.	Pitch	7.62 (H) x 7.62 (V)mm
22.	Intensity of display	In-built light sensor with continuously variable brightness control to enable the display intensity to change based on ambient light conditions.
23.	Viewing distance	15 meters minimum, for single line text in both Day and Night
24.	Data interface	Via RS 485
25.	Memory	Ability to retain the last message displayed in event of power failure without the message being reloaded from Controller
Structure		
26.	Aluminum Cabinet, Powder Coated finish with Polycarbonate at front	
27.	Weight - 5 kg	
28.	Mounting arrangement by roof hanging, wall mounting	
29.	Automotive grade components used, with conformal coated PCB boards	
30.	Technical Specification	
31.	To display Bus number and Destination in Fixed, Scrolling, and flashing mode formats with the help of SCU / Bus Controller with fixed route number up to 6 characters with capability to show customized graphics	
32.	Display in English (2 lines) / Hindi (1 line) / Odia (1 line)	
33.	Total display height is capable to accommodate two lines in English language and the Individual heights of each line are adjustable to enable one line to be larger/smaller than the second line.	
34.	Possible to display, concurrently, different messages	
35.	Able to display special signs like signs for 'PWD enable bus', ‘ladies special’.	
36.	Display in English and Odia using Microsoft fonts via window-based software package	
37.	Possible to change/choose/select a 'route' remotely over the air from back office and provide current route information to back office through SCU	
38.	Back office can check, via SCU, the version of firmware loaded on the display.	
39.	Able to store Diagnostic trouble codes (DTC), Parameters identifiers (PID) as per Annex-3 and data retrievable through SCU	

6.13. CCTV Camera with NVR

- CCTV elements shall work under an operating temperature range of -10 to +70 °C.
- CCTV elements shall work under an operating humidity of 95% RH non condensing.

IP Camera

- Fixed lens 3.6 mm
- Resolution 1280 x 720 pixels
- Picture sensor =1/3"" CCD or 1/3"" CMOS or better.
- The camera shall support H.254 Video Compression
- The camera shall support G.711 or G726 Audio Compression
- The IP camera shall support 1 to 30 fps for different resolutions.
- The camera shall have minimum illumination of 0.01Lux/F1.2 with IR Off and 0.0 Lux with IR On

- The IP camera shall have shutter time of 1/50 sec to 1/100,000 sec.
- The IP camera shall have Built-in Infrared LEDs with range of minimum 10 meters, Auto Day/Night
- The camera shall have ruggedness of:
  - Rugged, vibration, shock and tamper proof metal housing
  - Anti-vibration installation with locking mechanism
  - Vibration resistance as per /IS 9000-part 7.
  - Shock resistant as per /IS 9000-part 8.
- Ingress protection rating IP65
- The camera shall have a -10-to-70-degree Celsius operating temperature.
- The camera shall have operating humidity of 0% to 95%
- The camera shall have a built-in microphone.
- The camera shall support image enhancement of Auto-tracking White Balance (ATW), Automatic Gain
- Control, Wide Dynamic Range (WDR) and Automatic Backlight Compensation.
- The camera shall support to power to NVR through Power-over-Ethernet.
- The camera shall support RJ45 10/100 M Ethernet Interface
- Flammability/burning tests HB as per UL 94-1998 Clause 7 (for wire harness) or IS2465

NVR Recorder

- 4 input /1 output video channels
- 4 input /1 output audio channels
- H.264 video compression standards
- G.711 or G.726 audio compression standards
- Dual streams, both streams independently configurable for each camera resolution and frame rate.
- Shall support 720p/4CIF/2CIF/CIF/QCIF (can be set independently for each channel, for both streams)
- recording resolutions
- Shall support 1 to 30 fps for all channels at 720p – resolution and frame rate can be set independently for each camera.
- 1 TB, Solid State Drive with suitable anti-vibration mechanism, Storage to be pluggable and easily removable, secure and protected by lock.
- It shall support event-based recording and tagging:
  - Pre-recording – 1 to 30 minutes
  - Post-recording – 1 to 30 minutes
- Shall have 9 to 32 volts, spike/surge protection.
- It shall have the facility of Integrated PoE switch supporting peak power requirement for 4 CCTV cameras with infrared on.
- 1 x RJ45 LAN interface (additional to those of the cameras)
- It shall support the external interface 1 RS232 and USB 2.0
- It shall be capable of working on -10 to 70 degrees Celsius.
- It shall be capable of handle 0% to 95% humidity.
- Ingress protection IP54 or better
- It shall have Minimum 5 configurable image settings (1 to be the best quality)
- It shall have Tamper-proof Watermark
- It shall have ability for video over-written to be configurable to support:
  - Cyclic overwriting (oldest recording to be overwritten)
  - Event tagged recording not to be overwritten.
- It shall have LED indicators for Power, Recording, Network

- Capable of sending images (of configurable resolution, 720p, 4CIF, CIF, 2CIF, QCIF) from each camera to the server at specified frequency (configurable).
- It shall provide video and audio download facility for the desired date/time and duration.
- Flammability/burning tests HB as per UL 94-1998 Clause 7 (for wire harness) or IS2465

6.14. Network Switches

S.N.	Specifications	
1	Standards	IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, IEEE 802.3x, IEEE 802.3
2	Network Ports	Eight 10/100/1000 Gigabit ports
3	Switch Capacity	16Gbps
4	MAC Address Table	4k
5	Flow Control	YES
6	Backpressure	Should have backpressure Support
7	LED	Power, 1000Mbps, Link/Act
8	Certification	CE, FCC, RoHS
9	Operating Temperature	0°C —40 °C (32 °F —104°F)
10	Storage Temperature	-40 °C '70 °C (-40 °F —158°F)
11	Operating Humidity	10%-90% non-condensing
12	Storage Humidity	5%-90% non-condensing

6.15. UPS 1 KVA

S.N.	Particulars	Specification
1	Technology	Rectifier & Inverter both IGBT based
		DSP based controlled Digital Design
		Double Conversion True On-line UPS
2	Certifications	ISO 9001 & 14001 Certified OEM
Input		
3	Input Voltage& Range	170-290V AC, Single Phase
4	Input Freq. Range	45 - 55 Hz
5	Input Power Factor	>0.95(1Ph)
Output		
6	Output	1KVA
7	Voltage	220V/230 V/240 V AC
8	Output Frequency regulation	50Hz ± 0.1%
9	O/p Voltage Distortion	< 5% (Non-linear load)
10	Output Waveform	Pure Sine wave
Battery		
11	Battery Backup	120 minutes
12	Battery Type	12V Sealed lead maintenance free VRLA type

S.N.	Particulars	Specification
13	Battery Make	EXIDE, PANASONIC, QUANTA, ROCKET
14	VDC	Min 36VDC or higher
15	Battery Ratings	Min. 3200 VAH – 1KVA
General		
16	Display	LED Display
17	Safety	As per latest Bureau of Indian Standards (BIS) approved Indian Safety standards or equivalent
18	Operating Temp.	0 to 40 degrees centigrade
10	Noise level	<45 dB @1 Meter, EN 62040-2, 2006
20	Bypass	Automatic Bypass Switch
21	DG Compatibility	UPS to be compatible with DG Set supply and mains supply
22	Surge `Protection	External Transient Voltage Surge Suppressor of 10kA surge capacity, LED status, UL-1449-3, Response time of less than 0.5ns
23	Standard	RS 232 / USB port with software for monitoring & Shutdown of connected PCs.
24	Alarms and Indications	All necessary alarms & indications essential for performance monitoring of UPS to be incorporated.
25	Dimensions	Specify dimensions (H x W x D) for UPS & Batteries Set

6.16. Videowall

Sr. No.	Particular	Minimum Specification
1	Configuration	Backlight LED Videowall of 3 x 3 of Super narrow Bezel LCD panels of 55"
2	Resolution	920 x 1080
3	Pixel Pitch	0.53 mm
4	Light Source	LED
5	Contrast Ratio	4000:1
6	Color Capability	1.07 billion
7	Response Time	8 ms
8	Viewing Angle	H : 178°, V : 178°
9	Scan Rate	H: 30~75kHz, V: 50~85Hz
10	Video	NTSC, PAL, SECAM 480i, 480p, 720p, 1080i, 1080p
11	Standard Inputs	Standard Inputs 1x Digital DVI-I/1x Digital DVI-D/other standard compatible input ports
12	Standard Outputs	1x Digital DVI-D ; 1x CVBS BNC
13	Control	RS-232/RS-422/IR
14	Input Voltage	AC 90~240V@50/60 Hz
15	Power Consumption	< 160W
16	Standby Mode	< 2W at 110V
17	Temperature	0°C -35°C (32°F -95°F)
18	Humidity	10% -90%, non-condensing
19	Operating Life	> 50,000 hours
20	Maintenance Feature	Quick Swap Modules

Sr. No.	Particular	Minimum Specification
21	Combined Bezel (Typical)	5.7 mm
22	Video Wall Tiling	20 X 15
23	Display controller	Controller to control Display module in a matrix of 2 (C) x 2 (R) with 4 outputs, DUAL LAN input & 8 DVI inputs along with necessary software's
24	Processor	Single Quad Core Intel® Xeon 64-bit 2.0 GHz CPU or latest
25	Ram	8 GB minimum
26	HDD	Min 500 GB Hard Disk
27		Hard disk Capacity should be upgradable
28	Networking	Dual-port Gigabit Ethernet Controller inbuilt
29		Support for Add on Network adapters
30		Support for Optical Fiber interface Adapters
31	Accessories	DVD-R,DVD+RW, Keyboard, mouse
32	OS	Support 64-bit Operating Systems Windows / Linux
33	Power Supply	(1 + 1) Redundant AC-DC high-efficiency power supply w/ PFC AC Voltage 100 -240V, 50-60Hz
34	Chassis	19" industrial Rack mount movable Front Panel should have lockable Door to Protect Drives
35	Wall configuration	4 DVI-D Outputs
36	Resolution output support	1920x1200 per output minimum
37	Universal Inputs	2 DVI Inputs
38	Redundancy Support	System Should have the redundancy support for following: Fans Power Supply LAN
39	Manufacturing	OEM should have a manufacturing facility in India with its own service center manned by its own engineers for providing support

6.17.UPS 3 KVA

Sr. No.	Description	Minimum Required Specification
1	Rating (in KVA)	3 KVA
A	**Input**	
1	Nominal Voltage	230 VAC
2	Nominal Frequency	50Hz
3	Input Power Factor	>0.95
4	Input Voltage Range	165-275 VAC
5	Frequency Range	45 to 55 Hz
B	**Output**	
1	Invertor Design	IGBT Based Technology
2	Voltage	220 V/230V / 240 VAC

Sr. No.	Description	Minimum Required Specification
3	Voltage Regulation	1% to 2%
4	Waveform	Pure Sine wave
5	Total Harmonic Distortion	< 3% for linear load
6	Crest Factor	3:1
C	**Environmental**	
1	Operational Temperature	0 to 40 Deg
2	Relative Humidity	20 - 90% (non-Condensing)
D	**Physical**	
1	Enclosure Protection	IP 20
2	Cooling	Forced Air Cooling
E	**Bypass**	
1	Static Bypass	Auto & Manual
2	Transfer	No Break
F	**Battery**	
1	Type	Sealed Maintenance Free
2	DC Voltage	36 V
3	Recharge Time	8-10 hrs
4	VAH Required	3000 VAH
5	Battery Backup	4 hours
6	Battery makes	Exide / Quanta / Rocket
G	**General**	
1	Overall Efficiency on Full load	> 87%
2	Acoustic Noise (in dbA)	<50 dBA @ 1 Meter
3	Alarms	Audible Alarm required for Mains Failure, Low Battery Over Load
4	Display Panel	LCD Display with Measurements (Input /Output/Frequency, Battery Voltage)
H	**Communications**	
1	Connection Type	USB
2	SNMP Interface	Intelligent slot for SNMP/AS400/Modbus

7. Service Level Agreement (SLAs)

The primary intent of Penalties is to ensure that the system performs in accordance with the defined service levels. Penalties are not meant to be punitive or, conversely, a vehicle for additional fees. This section describes the service levels to be established for the Services offered by the Bidder to OSRTC. The Bidder shall monitor and maintain the stated service levels to provide quality service to OSRTC.

- Implementation Service Levels
- Operation Service Levels
    - Infrastructure and Application Availability & Performance Service Levels

- Handholding Support: Application Support Service Levels
- Help Desk Service Levels

7.1. Definitions

- "Scheduled Maintenance Time" shall mean the time that the System is not in service due to a scheduled activity as defined in this SLA. The scheduled maintenance time would not be during 18x7 timeframe. Further, scheduled maintenance time is planned downtime with the prior permission of OSRTC.
- 18x7 shall mean hours between 5AM – 11 PM on all working days excluding Public Holidays or any other Holidays observed by OSRTC.
- "Scheduled operation time" means the scheduled operating hours of the System for the month. All scheduled maintenance time on the system would be deducted from the total operation time for the month to give the scheduled operation time. The total operation time for the systems and applications within the Primary DC, DRC will be 24x7x365. The total operation time for the client site systems shall be the business hours of OSRTC.
- "System or Application downtime" means accumulated time during which the System is totally inoperable within the Scheduled Operation Time but outside the scheduled maintenance time and measured from the time OSRTC and/or its employees log a call with the Bidder team of the failure or the failure is known to the Bidder from the availability measurement tools to the time when the System is returned to proper operation.
- "Availability" means the time for which the services and facilities are available for conducting operations on the OSRTC system including application and associated infrastructure. Availability is defined as:
- {(Scheduled Operation Time – System Downtime) / (Scheduled Operation Time)} * 100%
- "Helpdesk Support" shall mean the 22x7 basis support center which shall handle Fault reporting, Trouble Ticketing and related enquiries during this contract. Helpdesk support is to be provided from 4:00 AM to 2.00 AM (all working days)
- "Incident" refers to any event / abnormalities in the functioning of the any of IT Equipment / Services that may lead to disruption in normal operations of the Data Centre, System or Application services.
- The business hours are 4:00 AM to 2.00 AM on all working days. The Bidder however recognizes the fact that OSRTC offices will require us to work beyond the business hours on need basis.
- "Non-Business Hours" shall mean hours excluding "Business Hours".

7.2. Commencement and Duration of SLA

This SLA shall commence on the date of signing of Agreement or issue of Work Order by OSRTC and the Bidder (hereinafter the 'effective date') whichever is earlier and shall, unless terminated earlier in accordance with its terms or unless otherwise agreed by the parties, continue for a period of 3 years (extendable up to 2 years) after "Go-live" of the Project.

7.3. Interpretation & General Instructions

- "Non-Business Hours" shall mean hours excluding "Business Hours".
- Bidder shall provide an automated tool to monitor and report all the SLAs as mentioned.

- A Service Level violation will occur if the Bidder fails to meet Minimum Service Levels, as measured on a Quarterly basis, for a particular Service Level. Overall Availability and Performance Measurements will be monthly for the purpose of Service Level reporting. An "Availability and Performance Report" will be provided by the Bidder on monthly basis in the OSRTC suggested format and a review shall be conducted based on this report. A monthly Availability and Performance Report shall be provided to the OSRTC at the end of every month containing the summary of all incidents reported and associated Bidder performance measurement for that period.
- The SLAs will prevail from the start of the Operations and Maintenance Phase. Payments to the Bidder are linked to the compliance with the SLA metrics laid down in the tables below. The penalties will be computed and calculated as per the computation explained in this Section. During the contract period, it is envisaged that there could be changes to the SLA in terms of addition, alteration or deletion of certain parameters, based on mutual consent of both the parties i.e., OSRTC and Bidder.
- The SLA is not a fixed document to be produced once and used forever. Instead, it must be re-evaluated and updated as the work environment changes. As technology changes, the services and systems covered by the SLA and their performance expectations will change. This document may be reviewed and revised by mutual Agreement between OSRTC and Bidder. Changes to the SLA may be required at other times to include new systems, changes in operating hours, etc.
- All changes to the SLA will be initiated in writing between OSRTC and the Bidder. The Service levels here are standard for OSRTC and will be modified when both parties agree to an appended set of terms and conditions.
- All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down except in money calculations where such amounts shall be rounded off to the nearest Rupee.
- The following table outlines the key service level requirements for the system, which need be ensured by the Bidder during the operations and maintenance period. These requirements shall be strictly imposed and either OSRTC or a third-party audit/certification agency shall be deployed for certifying the performance of the Bidder against the target performance metrics as outlined in the tables below.

7.4. Implementation Service Level

- Parameters: The SLA parameters for the implementation stage would be directly related to the delivery timelines of the deliverables as mentioned. This would consist of the entire Bill of Materials and the applications system with successful UAT of the same.
- Period: These SLAs would be applicable until GO-LIVE. The deliverables would be measured at every payment milestone as mentioned.
- Penalty Value: For delay of every week in completion & submission of the deliverable, the SI would be charged with a penalty as follows.

Delay (Weeks)	Penalty % on the respective Payment milestone value
1	**0.15 %**
2	**0.20 %**
3	**0.25 %**

- Capping: The upper limit of penalty would be capped at 10% of the respective Payment Milestone value. In case the successful bidder reaches 10% of the respective Payment Milestone value in the form of penalty at any point of time during pre-implementation phase, OSRTC reserves the right to invoke the termination clause.
- A delay of every week would also account for an increase of an additional 2 weeks in the maintenance period which will be over and above the maintenance period of 3+2 years. This duration would be accounted without incurring any charges to OSRTC.

7.5. Operation Service Level

SLA Management and Monitoring Tool as specified in this RFP shall play a critical role in monitoring the SLA compliance and hence will have to be customized accordingly. The 3rd party testing and audit of the system shall put sufficient emphasis on ensuring the capability of SLA Management and Monitoring Tool to capture SLA compliance correctly and as specified in this RFP. The selected Bidder (SI) must deploy SLA Management and Monitoring tool and provide for capturing the required data for SLA report generation in automated way. This tool should generate the SLA Management and Monitoring report at the end of every month and every quarter which is to be shared with OSRTC. OSRTC will audit the tool and the scripts on a regular basis.

Where required, some of the Service Levels will be assessed through audits or reports e.g., utilization reports, measurements report, etc., as appropriate to be provided by the Bidder on a quarterly basis, in the formats as required by OSRTC.

Sr. No	Parameter	Measurement of SLAs
1	Infrastructure Related SLAs	SLA Management and Monitoring Tool
2	ITS Application related SLAs	SLA Management and Monitoring Tool
3	Client Site (ICT Assets) Availability	SLA Management and Monitoring Tool

It may be noted that the Bidder must provide the required tools to measure the SLA parameters. OSRTC reserves the right to appoint a Third Party for the audits. Audits will normally be done on a regular basis or as required by OSRTC and will be performed by OSRTC or OSRTC appointed third party agencies. The bidder shall make provision that requisite permission is given to the Third-Party Agency for carrying out the audit process on regular basis.

7.6. Violations and Associated Penalties

The framework for Penalties, because of not meeting the Service Level Agreements Targets is as follows:

- A quarterly performance evaluation will be conducted using the Quarterly reporting periods of that period.
- The performance will be measured for each of the defined service level metric against the minimum/ target service level requirements and the violations will be calculated accordingly.
- The number of violations in the reporting period for each level of severity will be totaled and used for the calculation of Penalties.

- Penalties applicable for each of the high severity (H) violations are one (1) % of respective Quarterly payment to the Bidder.
- Penalties applicable for each of the medium severity (M) violations is half percentage (0.5%) of respective Quarterly payment to the Bidder.
- Penalties applicable for each of the low severity (L) violations are Quarter percentage (0.25%) of respective Quarterly payment to the Bidder.
- Penalties applicable for not meeting a high (H) severity performance target in two consecutive Quarters on same criteria shall result in additional deduction of 3% of the respective Quarterly payment to the Bidder. Penalties shall be applicable separately for each such high critical activity.
- Penalties applicable for not meeting a medium (M) severity performance target in two consecutive Quarterly periods on same criteria shall result in additional deduction of 2% of the respective Quarterly payment to the Bidder. Penalties shall be applicable separately for each such medium critical activity.
- Penalties applicable for not meeting a low (L) severity performance target in two consecutive Quarterly periods on same criteria shall result in additional deduction of 1% of the respective Quarterly payment to the Bidder. Penalties shall be applicable separately for each such medium critical activity.
- It is to be noted that if the overall penalty applicable for any of the review period during the contract exceeds 25% of the quarterly payment or if the overall penalty applicable for any of the successive Quarterly periods during the contract is above 15%; then OSRTC shall have the right to encash the Performance Bank Guarantee or terminate the contract or both.

7.7. Operations and Maintenance

Production ITS Systems

- The failure or disruption of Live (in production) ITS System has a direct impact on OSRTC's ability to service its user units, ability to perform critical OSRTC's office functions or a direct impact on the organization. This includes but not limited to: -
    - Operations and Maintenance

Non-ITS Systems in Production and Non-Production Systems (Development, QA, Training & other Servers to be hosted)

- The failure or disruption has an indirect impact on the OSRTC's ability to serve its user units, to perform critical OSRTC's office functions.
- Non-Production ITS Servers (Staging Environments)
- Test, QA, and Training Environments
- Helpdesk infrastructure & applications
- SLA Management and Monitoring Tool
- The below tables give details on the Service Levels the Bidder should maintain. These service levels will be monitored monthly and measured on a quarterly basis.

7.8. DC Service Availability

<table>
<tr><th>Service Level Description</th><th>Severity of violation</th><th>Measurement</th></tr>
<tr><td>Composite Service Availability should be minimum 99.9%</td><td>High</td><td>
<table>
<tr><th>Availability over the Quarter</th><th>No. of Violations to be counted for calculation of penalty</th></tr>
<tr><td>< 99.9% & >= 99.7%</td><td>1</td></tr>
<tr><td>< 99.7% & >= 99.5%</td><td>2</td></tr>
<tr><td>< 99.5%</td><td>3 for every percentage drop or part thereof below 99.5%</td></tr>
</table>
Composite Service Availability means availability and performance of infrastructure and application services for proposed ITS Solution on Cloud
</td></tr>
</table>

7.9. Client Site Availability

- The Bidder is expected to submit a quarterly report on the availability to OSRTC.
- Client Site Infrastructure Systems.
- Critical Client Site Systems: The failure or disruption results in inability of the user unit to service its dependent user units or perform critical OSRTC's functions. Critical client site infrastructure means the IT infrastructure at client site which are shared by multiple users i.e., Core Switch, Core Routers or anything from end user to application access etc.
- The below tables give details on the Service Levels the Bidder should maintain.
- Bidder shall ensure that no non-production activity (issue resolution, bug fixing, UAT, Testing, patch update) is carried out on Production (Live) ITS server. All such activities shall be carried out on a separate Test/ Non-production server by the Bidder. In case of non-compliance, OSRTC reserves the right to impose penalty, 5% of the subsequent payment, during the period of operation and may also invoke the Termination Clause

7.10. Client Site ITMS Application Performance

<table>
<tr><th>Service Level Description</th><th>Severity of Violation</th><th>Measurement</th></tr>
<tr><td>Average Application Response Time</td><td>Medium</td><td>Average Application Response Time during peak usage hours as measured at any of OSRTC’s location shall not exceed 3 seconds.
The list of critical business functions and peak usage hours will be identified by OSRTC during the Detail Design phase.
This service level will be measured on a quarterly basis.
<table>
<tr><th>Average Application Response Time over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 3 sec & <= 5 sec</td><td>2</td></tr>
<tr><td>> 5 sec & <= 8 sec</td><td>4</td></tr>
<tr><td>> 8 sec</td><td>5 for every second increase or part thereof exceeding 8 seconds</td></tr>
</table>
In addition to the above, if the average application response time in any month in the Quarter goes beyond 8s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.</td></tr>
<tr><td>Maximum Time for Home Page opening</td><td>Low</td><td>Maximum Time for Home Page opening during peak usage as measured at any of OSRTC’s locations shall not exceed 2 seconds.
This service level will be measured on a quarterly basis.
<table>
<tr><th>Maximum Time for Home Page opening over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 2 sec & <= 4 sec</td><td>2</td></tr>
<tr><td>> 4 sec & <= 6 sec</td><td>3</td></tr>
<tr><td>> 6 sec</td><td>4 for every second increase or part thereof exceeding 6 seconds</td></tr>
</table>
In addition to the above, if the Maximum Time for Home Page opening in any month in the Quarter goes beyond 6s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.</td></tr>
<tr><td>Menu Page after User Login</td><td>Low</td><td>Menu Page after User Login opening during peak usage as measured at any of OSRTC’s location shall not exceed 2 seconds.
This service level will be measured on a quarterly basis.
<table>
<tr><th>Menu Page after User Login opening over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 2 sec & <= 4 sec</td><td>2</td></tr>
<tr><td>> 4 sec & <= 6 sec</td><td>3</td></tr>
<tr><td>> 6 sec</td><td>4 for every second increase or part thereof exceeding 6 seconds</td></tr>
</table>
In addition to the above, if the Menu Page after User Login opening in any month in the Quarter goes beyond 6s, one (1) additional violation will be added for each</td></tr>
</table>

<table>
<tr><th>Service Level Description</th><th>Severity of Violation</th><th>Measurement</th></tr>
<tr><td></td><td></td><td>such month to the overall violations for this service level in the quarter.</td></tr>
<tr><td>Menu Navigation – To display the menu as per the defined user role and profile</td><td>Low</td><td>Menu Navigation – To display the menu as per the defined user role and profile opening during peak usage as measured at any of OSRTC’s location shall not exceed 2 seconds.
This service level will be measured on a quarterly basis.

<table><tr><th>Menu Navigation – To display the menu as per the defined user role and profile over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr><tr><td>> 2 sec & <= 4 sec</td><td>2</td></tr><tr><td>> 4 sec & <= 6 sec</td><td>3</td></tr><tr><td>> 6 sec</td><td>4 for every second increase or part thereof exceeding 6 seconds</td></tr></table>In addition to the above, if the Menu Navigation – To display the menu as per the defined user role and profile opening in any month in the Quarter goes beyond 6s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.</td></tr>
<tr><td>Screen Opening – To display the selected data entry screen from the menu chosen</td><td>Low</td><td>Screen Opening – To display the selected data entry screen from the menu chosen during peak usage as measured at any of OSRTC’s location shall not exceed 2 seconds.
This service level will be measured on a quarterly basis.<table><tr><th>Screen Opening – To display the selected data entry screen from the menu chosen over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr><tr><td>> 2 sec & <= 4 sec</td><td>2</td></tr><tr><td>> 4 sec & <= 6 sec</td><td>3</td></tr><tr><td>> 6 sec</td><td>4 for every second increase or part thereof exceeding 6 seconds</td></tr></table>In addition to the above, Screen Opening – To display the selected data entry screen from the menu chosen opening in any month in the Quarter goes beyond 6s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.</td></tr>
<tr><td>Response time to commit a transaction.
• Simple Complexity
• Medium Complexity
• High Complexity
(Complexity of the transaction to depend</td><td>High</td><td>Response time to commit a transaction during peak usage as measured at any of OSRTC’s location shall not exceed 4 seconds for Simple transactions, 7 seconds for medium complexity transactions and 10 seconds for High Complexity transactions.
This service level will be measured on a quarterly basis.
Penalty for Simple transaction SLA violation</td></tr>
</table>

<table>
<tr><th>Service Level Description</th><th>Severity of Violation</th><th>Measurement</th></tr>
<tr><td>on the complexity of the business logic and stored procedures committed at the database level)</td><td></td><td>
<table>
<tr><th>Response time to commit a Simple transaction over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 4 sec & <= 6 sec</td><td>2</td></tr>
<tr><td>> 6 sec & <= 8 sec</td><td>3</td></tr>
<tr><td>> 8 sec</td><td>4 for every second increase or part thereof exceeding 8 seconds</td></tr>
</table>
In addition to the above, Response time to commit a Simple transaction in any month in the Quarter goes beyond 8s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.
Penalty for Medium Complexity transaction SLA violation
<table>
<tr><th>Response time to commit a Medium Complexity transaction over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 7 sec & <= 9 sec</td><td>2</td></tr>
<tr><td>> 9 sec & <= 11 sec</td><td>3</td></tr>
<tr><td>> 11 sec</td><td>4 for every second increase or part thereof exceeding 11 seconds</td></tr>
</table>
In addition to the above, Response time to commit a Medium Complexity transaction in any month in the Quarter goes beyond 11s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.
Penalty for High Complexity transaction SLA violation
<table>
<tr><th>Response time to commit a High Complexity transaction over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 10 sec & <= 12 sec</td><td>3</td></tr>
<tr><td>> 12 sec & <= 14 sec</td><td>4</td></tr>
<tr><td>> 14 sec</td><td>5 for every second increase or part thereof exceeding 14 seconds</td></tr>
</table>
In addition to the above, Response time to commit a High Complexity transaction in any month in the Quarter goes beyond 14s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.
</td></tr>
<tr><td>Response time for Screen with Query Retrieval
• Simple Query</td><td>High</td><td>Response time for Screen with Query Retrieval during peak usage as measured at any of OSRTC's location shall not exceed 4 seconds for Simple Query, 7 seconds</td></tr>
</table>

<table>
<tr><th>Service Level Description</th><th>Severity of Violation</th><th>Measurement</th></tr>
<tr><td>• Medium Complexity Query
• High Complexity Query

(Complexity of the query will depend on the business logic, size of tables in databases being searched, indexing of database and the way procedures are written to retrieve information)</td><td></td><td>for Medium Complexity Query and 10 seconds for High Complexity Query.
This service level will be measured on a quarterly basis.
Penalty for Simple Query SLA violation
<table>
<tr><th>Response time for Screen with Query Retrieval for a Simple Query over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 4 sec & <= 6 sec</td><td>2</td></tr>
<tr><td>> 6 sec & <= 8 sec</td><td>3</td></tr>
<tr><td>> 8 sec</td><td>4 for every second increase or part thereof exceeding 8 seconds</td></tr>
</table>
In addition to the above, Response time for Screen with Query Retrieval for Simple Query in any month in the Quarter goes beyond 8s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.
Penalty for Medium Complexity Query SLA violation
<table>
<tr><th>Response time for Screen with Query Retrieval for a Medium level transaction over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 7 sec & <= 9 sec</td><td>2</td></tr>
<tr><td>> 9 sec & <= 11 sec</td><td>3</td></tr>
<tr><td>> 11 sec</td><td>4 for every second increase or part thereof exceeding 11 seconds</td></tr>
</table>
In addition to the above, Response time for Screen with Query Retrieval for Medium Complexity Query in any month in the Quarter goes beyond 11s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.
Penalty for High Complexity Query SLA violation
<table>
<tr><th>Response time for Screen with Query Retrieval for a Complex transaction over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 10 sec & <= 12 sec</td><td>3</td></tr>
<tr><td>> 12 sec & <= 14 sec</td><td>4</td></tr>
<tr><td>> 14 sec</td><td>5 for every second increase or part thereof exceeding 14 seconds</td></tr>
</table>
In addition to the above, Response time for Screen with Query Retrieval for High Complexity Query in any month in the Quarter goes beyond 14s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.</td></tr>
</table>

<table>
<tr><th>Service Level Description</th><th>Severity of Violation</th><th>Measurement</th></tr>
<tr><td>Reports Generation Response Time
• Simple Query
• Medium Complexity Query
• High Complexity Query
(Time of the report generation will depend on the complexity of the query, no. of parameters fetched, and level of customization required to generate the report)</td><td>Medium</td><td>Reports Generation Response Time during peak usage as measured at any of OSRTC's location shall not exceed 4 seconds for Simple Query, 7 seconds for Medium Complexity Query and 10 seconds for High Complexity Query.
This service level will be measured on a quarterly basis.
Penalty for Simple Query SLA violation
<table>
<tr><th>Report Generation Response time from a Simple Query over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 4 sec & <= 6 sec</td><td>2</td></tr>
<tr><td>> 6 sec & <= 8 sec</td><td>3</td></tr>
<tr><td>> 8 sec</td><td>4 for every second increase or part thereof exceeding 8 seconds</td></tr>
</table>
In addition to the above, Response time to generate a report from a Simple Query in any month in the Quarter goes beyond 8s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.

Penalty for Medium Complexity Query SLA violation
<table>
<tr><th>Report Generation Response time from a Medium Complexity Query over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 7 sec & <= 9 sec</td><td>2</td></tr>
<tr><td>> 9 sec & <= 11 sec</td><td>3</td></tr>
<tr><td>> 11 sec</td><td>4 for every second increase or part thereof exceeding 11 seconds</td></tr>
</table>
In addition to the above, Response time to generate a report from a Medium Complexity Query in any month in the Quarter goes beyond 11s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.

Penalty for High Complexity Query SLA violation
<table>
<tr><th>Report Generation Response time from a High Complexity Query over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 10 sec & <= 12 sec</td><td>3</td></tr>
<tr><td>> 12 sec & <= 14 sec</td><td>4</td></tr>
<tr><td>> 14 sec</td><td>5 for every second increase or part thereof exceeding 14 seconds</td></tr>
</table>
In addition to the above, Response time to generate a report from a High Complexity Query in any month in</td></tr>
</table>

<table>
<tr><th>Service Level Description</th><th>Severity of Violation</th><th>Measurement</th></tr>
<tr><td></td><td></td><td>the Quarter goes beyond 14s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.</td></tr>
<tr><td>Maximum time for submission of forms/ data</td><td>High</td><td>Maximum time for submission of forms/ data during peak usage as measured at any of OSRTC's location shall not exceed 4 seconds.
This service level will be measured on a quarterly basis.
Penalty for maximum time for submission of forms SLA violation
<table>
<tr><th>Response time to commit a Simple transaction over the Quarter</th><th>No. of violations to be counted for calculation of penalty</th></tr>
<tr><td>> 4 sec & <= 6 sec</td><td>2</td></tr>
<tr><td>> 6 sec & <= 8 sec</td><td>3</td></tr>
<tr><td>> 8 sec</td><td>4 for every second increase or part thereof exceeding 8 seconds</td></tr>
</table>
In addition to the above, Maximum time for submission of forms/ data in any month in the Quarter goes beyond 8s, one (1) additional violation will be added for each such month to the overall violations for this service level in the quarter.</td></tr>
</table>

7.11. Handholding Support: Application Support

- Level 1 Defects: The failure to fix has an immediate impact on the OSRTC's ability to service its user units, inability to perform critical OSRTC office functions or a direct impact on the organization.
- Level 2 Defects: The failure to fix has an immediate impact on the OSRTC's ability to service its user units/ that while not immediate, can cause service to degrade if not resolved within reasonable time frames.
- Level 3 Defects: The failure to fix has no direct impact on the OSRTC's ability to serve its user units or perform critical OSRTC's office functions.
- The severity of the individual defects will be mutually determined by the OSRTC and Bidder.
- This service level will be monitored monthly.
- The below table gives details on the Service Levels the Bidder should maintain.

<table>
<tr><th>Service Level Description</th><th>Severity of Violation</th><th>Measurement</th></tr>
<tr><td>Application Support Performance</td><td>High</td><td>95% of the Level 1 defects shall be resolved within 4 business hours from the time of reporting full details. This service level will be monitored monthly.
<table>
<tr><th>Performance over the Quarter</th><th>Violations for calculation of penalty</th></tr>
<tr><td>< 95% &>= 90%</td><td>1</td></tr>
<tr><td>< 90% &>= 85%</td><td>2</td></tr>
<tr><td>< 85%</td><td>3</td></tr>
</table>
In addition to the above, if the service level in any month in the Quarter falls below 85%, one (1) additional violation will be added for each such month to the overall violations for this service level.</td></tr>
<tr><td>Application Support Performance</td><td>High</td><td>95% of the Level 2 defects shall be resolved within 72 hours from the time of reporting full details.
This service level will be monitored on a monthly basis.
<table>
<tr><th>Performance over the Quarter</th><th>Violations for calculation of penalty</th></tr>
<tr><td>< 95% &>= 90%</td><td>1</td></tr>
<tr><td>< 90% &>= 85%</td><td>2</td></tr>
<tr><td>< 85%</td><td>3</td></tr>
</table>
In addition to the above, if the service level in any month in the Quarter falls below 85%, one (1) additional violation will be added for each such month to the overall violations for this service level.</td></tr>
<tr><td>Application Support Performance</td><td>High</td><td>100% of the Level 3 defects shall be resolved within 120 hours from the time of reporting full details.
This service level will be monitored monthly.
<table>
<tr><th>Performance over the Quarter</th><th>Violations for calculation of penalty</th></tr>
<tr><td>< 100% &>= 90%</td><td>1</td></tr>
<tr><td>< 90% &>= 80%</td><td>2</td></tr>
<tr><td>< 80%</td><td>3</td></tr>
</table>
In addition to the above, if the service level in any month in the Quarter falls below 80%, one (1) additional violation will be added for each such month to the overall violations for this service level.</td></tr>
</table>

7.12. Help Desk

Sr. No.	Parameter	Formula	Baseline	Penalty	Example	Measurement
Helpdesk (Average taken over the period)						
1	Operator availability: Average availability time of all operators at Helpdesk	(Sum of minutes for which all Helpdesk operators are available/ Sum of minutes scheduled for availability of all Helpdesk operators) *100 Sum of minutes scheduled for availability of all operators will be calculated based on hours as mentioned in Point 1 above in this section	100%	0.1% of quarterly payout for drop in service level by every 25% on a pro-rata basis	If the average operator availability is 65%, penalty calculation is as follows: Total drop in service level = (100 – 65) = 35% Total penalty = (35/25) *0.1 = 0.14% quarterly payout	MIS reports generated from the system deployed, maintained, and operated by the SI at the Helpdesk

7.13. Exit Management

- ✓ To align both the parties on transition modalities, the Service Provider will submit a detailed Exit Management Plan before 6 months of the ending date of the contract. Exit Management Plan will include following but not limited to:
    - Detailed inventory of all licenses, documents, manuals, etc. created under the Project.
    - Method of Transition including roles and responsibilities of both the parties to handover and takeover the charge of project regular activities and support system.
    - Proposal for necessary setup or institution structure required at OSRTC level to effectively maintain the project after contract ending.
    - Training and handholding of OSRTC Staff or designated officers for maintenance of project after contract ending.
    - Provide backup of all data associated with OSRTC ITMS project in format as required/specified by OSRTC.

OSRTC will approve this plan after necessary consultation and start preparation for transition

8. Bills of Material

8.1. Active and Passive Infrastructure (Hardware)

S.N.	Item Description	Quantity	UoM
Hardware Requirement			
1	LED with metal frame at Bus Stop as per technical specifications	155	Nos
2	PIS at Bus terminus	25	Nos
3	Bus Terminal UPS 3 KVA, UPS with 4 hours of backup at Bus Terminal to operate POS	23	Nos
4	Depot workstations as per specification mentioned in the RFP with inbuilt OS	30	Nos
5	HQ & CCC workstations as per as per specification mentioned in the RFP with inbuilt OS	20	Nos
6	AVL System with GPS Devices (AIS-140)	500	Nos
7	Control Centre Hardware including 3X3 video wall, Networking equipment's, etc.	1	Nos
8	CCTV with NVR	420	Lot
9	PIS for Pre BS-6 buses	840	Nos
10	Passenger Counting System	600	Nos
11	Printer	2	Nos
12	Network Switches	2	Nos
13	UPS	2	Nos
14	Commissioning & Networking	1	Nos
15	Router	2	Nos
16	Firewall cum IPS/IDS	2	Nos
17	100 TB Storage	2	Nos
18	42U Rack	1	Nos
19	Cabling (UTP CAT6)	As per actuals	Meter
20	Videowall	1	Nos
21	ETIM Machine	600	Nos
22	SAM Module	600	Nos
23	SIM for ETIMs	600	Nos
24	ETIM charging station	30	Nos

8.2. ITMS Software Components

S.N	Items	Quantity	UoM
1	Financial Management System	1	Lot
2	Inventory Management Software	1	Lot
3	Incident/Grievance Management/Help Desk Software	1	Lot
4	Bus crew Scheduling and Dispatch Management Software	1	Lot
5	Depot Management System	1	Lot
6	Business Intelligence Software (5 Users)	1	Lot
7	Enterprise Management System	1	Lot
8	Commuter Mobile Application (Android and iOS)	1	Lot

S.N	Items	Quantity	UoM
9	Software for Control Centre Networking Equipment's System Software – License Fee	1	Lot
	a) Operating System		
	b) Database System		
	c) Application Server Platform		
	d) Third party Software / plug in / development Tools		
10	Human Resource Management System (HRMS) Software	1	Lot
11	Passenger Counting System	1	Lot
12	Automated Fare Collection System (AFCS)	1	Lot

9. Payment Terms

9.1. Description of payment component

#	Cost Head	CAPEX Component	Recurring Component
C1	Hardware component as per Bill of Material	Costs of supply, installation, commissioning, and related costs till project go-live for mentioned items	Costs related to AMC and related maintenance / warranty and related costs after project go-live till end of contract period for mentioned items
C2	Software component as per Bill of Material	Costs of development / customization, installation, testing, documentation, deployment, and related costs till project go-live for mentioned items	Costs related to maintenance, update of documentation, bug-fixing, warranty, and related costs after project go-live till end of contract period for mentioned items
C3	Cloud Infrastructure	Costs associated with cloud infrastructure hosting till project go-live	Costs associated with cloud infrastructure hosting after project go- live till end of contract period
C4	Networking and connectivity as per Bill of Material	Cost associated with networking component as per bill of material till project go-live	Cost associated with networking component as per bill of material after project go-live till end of contract period

9.2. Terms of payment

A. Software Payment

Sr. No.	Payment terms	Payment proportions (Software Cost)
1	**Development of ITS Solution**	
	1) Completion of FRS	10 %
	2) Completion of SRS & SDD	10 %

Sr. No.	Payment terms	Payment proportions (Software Cost)
	3) Development, Testing and Training of ITS Application	50%
2	**Project Completion and Successfully Running of ITS solution:**	20%
	Go-Live	
	User Acceptance	
	Deployment	

Note: The balance of 10% of the Implementation Cost would be paid to the bidder proportionately over the duration of the contract (3 years after Go-Live and may be extendable up to 2 years on satisfactory performance of SI) on Quarterly basis, Post Go-Live. The Billing period of Hosting & maintenance Cost would begin after Go-Live.

B. Hardware Payment

Sr. No.	Procurement, Installation and Testing of Hardware	Payment proportions (Hardware Cost)
1	Supply, Installation of hardware components	50 %
2	Commissioning and Testing and Go-live of entire ITMS components.	30 %
3	The balance of the hardware payment would be paid to the bidder proportionately over the duration of the contract on Quarterly basis, post Go-Live	20%

C. DC Hosting and connectivity Payment

Sr. No.	Procurement, Installation and Testing of Hardware	Payment proportions of invoiced amount
1	**Application Maintenance Support for three years (extendable up to 2 years) post Go-Live** Includes product upgrades and maintenance, hosting support and dedicated manpower support for a period of 3+2 years along with dedicated Manpower. The maintenance period would commence Post- Go-Live	Quarterly Progress Report
2	**Hosting and Maintenance Support for three years (extendable up to 2 years) post Go-Live including Hardware maintenance cost.** Includes product upgrades and maintenance, hosting support and dedicated manpower support for a period of 3+2 years along with dedicated Manpower. The maintenance period would commence Post- Go-Live	Quarterly Progress Report

D. Project resource component* :Technical resources (Development & Implementation phase)

S.N.	Component Category	Quantity	Man-month Rate	Total Amount in Words
1	Program Manager	1		
2	Team Leader	1		
3	Solution Architect	1		
4	UI Designer	1		
5	Developers (3-5 years' Experience)	1		
6	Quality Expert	1		
7	Mobile Application Developers (3-5 years' Experience)	1		
8	Database Admin (5+ Years' Experience)	1		
9	Security Expert	1		
10	Systems Admin	1		
11	Tester (3-5 years' Experience)	1		
12	Helpdesk Services	1		

**The manpower cost sheet is only for reference; it shall not be added to the project cost.*

E. Operation & Maintenance Payment

Payment for O&M for 3 years will be made on Annuity Plan (Quarterly payment on pro rata basis on acceptance of Quarterly Progress Report)

9.3. Regulation, Licensing and Domain

The bidder shall arrange for all the necessary legal, regulatory, and licensing clearances for the trouble free/hassle free operations. All Licenses procured shall be in name of OSRTC.

10. Project and Product Documentation

The Bidder will be responsible for providing all detailed documentation mentioned in this RFP to OSRTC. The bidder shall prepare all User Manuals and training documents incorporating details of all menus and functionality provided by the System. The Bidder should provide ongoing product information for reference purposes and facilitate self-education for OSRTC Personnel. Key documents to be delivered by the bidder are:

- Project Management Plan, Process documents (As-Is and To-Be) consisting of granular details of each functional activity and any changes after the ITS implementation.
- Detailed Design document detailing technical architecture (application, network, and security)

- Database infrastructure architecture, including clustering/ mirroring, backup & recovery strategies, defining data structure, data dictionary as per standards laid down by Government of India/ Government of Odisha.
- System Architecture, Cloud-based interface architecture and integration architecture. Appropriate load balancing and clustering techniques should be adopted by the bidder in the Solution design for meeting the requirements of the RFP.
- Configuration Documentation: consisting of system setting and parameters for each function module.
- User Manual and Training documents including system instruction and use cases, running of a program to perform specific task in the system with sample reports, screen formats, details of menus & instructions on how to perform specific tasks in the system using screenshots etc.
- O&M documentation required for usage and maintenance of implemented solution at each location like Technical Manual, Installation Guides etc.
- Bidder must ensure the provision of Toolkit/ Troubleshoot guides and Learning Management system for every component of the Application/ System software as well as IT infrastructure.

END OF DOCUMENT

Odisha State Road Transport Corporation (OSRTC)

Request For Proposal (RFP)

For

Selection of System Integrator for Integrated Transport Management System (ITMS)

Volume-III: Draft Master Service Agreement

Table of Contents

Disclaimer

1. This Request for Proposal ("tender") is issued by Odisha State Road Transport Corporation (OSRTC).
2. The information contained in this Request for Proposal document (“tender”) or subsequently provided to Bidders, whether verbally or in documentary or any other form by or on behalf of the Odisha State Road Transport Corporation (OSRTC) (the Purchaser) or any of its employees or advisors, is provided to Bidders, on the terms and conditions set out in this tender.
3. This tender is not a Contract and is not an offer by the Purchaser to the prospective Bidders or any other person. The purpose of this tender is to provide interested parties with information that may be useful to them in the formulation of their Proposals in pursuant to this tender. This tender includes statements, which reflect various assumptions and assessments arrived at by the Purchaser, in relation to the project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This tender may not be appropriate for all persons, and it is not possible for the Purchaser, its employees, or advisers to consider the objectives, technical expertise, and particular needs of each party, who reads or uses this tender. The assumptions, assessments, statements, and information contained in this tender, may not be complete, accurate, adequate, or correct. Each Bidder should, therefore, conduct his own investigations and analysis and should check the accuracy, adequacy, correctness, reliability and completeness of the assumptions, assessments and information contained in this tender and obtain independent advice from appropriate sources.
4. Information provided in this tender to the Bidders 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 Purchaser accepts no responsibility for the accuracy or otherwise for any interpretation or opinion on the law expressed herein. The Purchaser, its employees and advisers make no representation or warrants and shall have no liability to any person including any 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 tender or otherwise, including the accuracy, adequacy, correctness, reliability or completeness of the tender and any assessment, assumption, statement or information contained therein or deemed to form part of this tender or arising in any way in this selection process.
5. The Purchaser also accepts no liability of any nature, whether resulting from negligence or otherwise, however caused, arising from reliance of any applicant upon the statements contained in this tender.
6. The Purchaser may, in its absolute discretion, but without being under any obligation to do so, update, amend or supplement the information, assessment or assumption contained in this tender. The issue of this tender does not imply that the Purchaser is bound to select a Bidder or to appoint the Selected Bidder for this project and the Purchaser reserves the right to reject all or any of the proposals, without assigning any reason whatsoever.
7. OSRTC or its authorized officers / representatives / advisors reserve the right, without prior notice, to change the procedure for the selection of the Successful Bidder or terminate discussions and the delivery of information at any time before the signing of any agreement for the Project, without assigning reasons thereof.
8. The tender Document does not address concerns relating to diverse investment objectives, financial situation, and particular needs of each party. The tender Document is not intended to

provide the basis for any investment decision and each Bidder must make its / their own independent assessment in respect of various aspects of the techno-economic feasibilities of the Project. No person has been authorized by OSRTC to give any information or to make any representation not contained in the tender Document.

9. The Bidder shall bear all its costs associated with or relating to the preparation and submission of its Proposal including but not limited to preparation and expenses associated with any demonstrations or presentations which may be required by the Purchaser, or any other costs incurred in connection with or relating to its Proposal. All such costs and expenses shall remain with the Bidder and the Purchaser shall not be liable in any manner whatsoever for the same or for any other costs or other expenses incurred by a Bidder, in preparation for submission of the Proposal, regardless of the conduct or outcome of the selection process.

1. Master Service Agreement

THIS MASTER SERVICE AGREEMENT ("Agreement") is made on this the <***> day of <***> 20… at <***>,India.

Between

.....Having its office at ___, India hereinafter referred to as **'Odisha Road Transport Corporation (OSRTC),** which expression shall, unlessthe context otherwise requires, include its permitted successors and assigns);

AND

<__>**,** a Company incorporated under the <Act Name >, having its registered office at <__> (hereinafter referredto as **'the System Integrator/SI'** which expression shall, unless the context otherwise requires, include its permitted successors and assigns).

Each of the parties mentioned above are collectively referred to as the '**Parties**' and individually as a '**Party**'.

Whereas

OSRTC is desirous for selection of System Integrator for Integrated Transport Management System (ITMS)

In furtherance of the same, OSRTC undertook the selection of a suitable System Integrator through a competitive bidding process for implementing the Project and in this behalf issued Request for Proposal (RFP) dated <***>.

The successful bidder has been selected as the System Integrator based on the bid response set out as Annexure <*> (Including all the documents submitted as part of the bid submission including technical bid, clarifications, and commercial bids) of this Agreement, to undertake the Project of the development and implementation of the solution, its roll out and sustained operations.

Definitions

Other terms used in this Agreement are defined where they are used and have the meanings there indicated. Unless otherwise specifically defined, those terms, acronyms and phrases in this Agreement that are utilized in the information technology services industry or other pertinent business context shall be interpreted in accordance with their generally understood meaning in such industry or business context.

Interpretation

In this agreement, unless otherwise specified:

- references to Clauses, Sub-Clauses, Paragraphs, Schedules, and Annexures are to clauses, sub- clauses, paragraphs, schedules, and Annexures to this Agreement.
- Words denoting singular use the plural and vice-versa and use of any gender includes the other genders.
- references to a 'company' shall be construed to include any company, or other body corporate, wherever and however incorporated or established.
- references to a 'person' shall be construed to include any individual, firm, company, government, state, or agency of a state, local or municipal authority or government body, association or partnership (whether having separate legal personality

- a reference to any statute or statutory provision shall be construed as a reference to the same as it may have been, or may from time to time be, amended, modified, or re-enacted.
- any reference to a 'day' (including within the phrase 'business day') shall mean a period of 24 hours running from midnight to midnight unless otherwise specified.
- References to a 'Business Day' shall be construed as a reference to a day (other than Saturday, Sunday and other gazette holidays) on which OSRTC or its nominated agencies/ partners is generally open for business at their respective locations.
- references to times are to Indian Standard Time.
- a reference to any other document referred to in this Agreement is a reference to that other document as amended, varied, novated, or supplemented at any time; and
- All headings and titles are inserted for convenience only. They are to be ignored in the interpretation of this Agreement.
- System Integrator (SI) has been used for the same entity i.e., bidder selected for the project.

Measurements and Arithmetic Conventions

All measurements and calculations shall be in the metric system and calculations done to 2 (two) decimal places, with the third digit of 5 (five) or above being rounded up and below 5 (five) being rounded down except in money calculations where such amounts shall be rounded off to the nearest INR.

Ambiguities within Agreement

In case of ambiguities or discrepancies within this Agreement, the following principles shall apply:

- as between two Clauses of this Agreement, the provisions of a specific Clause relevant to the issue under consideration shall prevail over those in a general Clause.
- as between the provisions of this Agreement and the Schedules/Annexures, the Agreement shall prevail, save and except as expressly provided otherwise in the Agreement or the Schedules/Annexures; and
- as between any value written in numerals and that in words, the value in words shall prevail.

Priority of Documents

This Agreement, including its Schedules and Annexures, represents the entire agreement between the Parties as noted in this Clause. If in the event of a dispute as to the interpretation or meaning of this Agreement it should be necessary for the Parties to refer to documents forming part of the bidding process leading to this Agreement, then such documents shall be relied upon and interpreted in the following descending order of priority:

- This Agreement along with the SLA agreement,
- Schedules and Annexures.
- NDA agreement
- the RFP along with subsequently issued corrigendum.
- Technical and commercial proposal submitted by the successful bidder, to the extent they along with subsequently issued clarifications furnished by the SI in response to the RFP, to the extent they are not inconsistent with any terms of the RFP.

For the avoidance of doubt, it is expressly clarified that in the event of a conflict between this Agreement, Annexures / Schedules or the contents of the RFP, the terms of this Agreement shall prevail over the Annexures / Schedules and Annexures / Schedules shall prevail over the contents and specifications of the RFP.

2. Scope of Project

- The System Integrator shall be required to develop / customize and implement "Integrated Transport Management System (ITMS)", manage, and provide technical support to the solution for the period of Implementation, stabilization, and 3 years (extendable up to 2 years on satisfactory performance of SI) for O&M from the date of Go-Live.
- The roles and responsibilities of the Parties under this Agreement have been set out in this Agreement and RFP.
- For the avoidance of doubt, it is expressly clarified that this Agreement shall govern the provision of the contracted professional services under the SLA to OSRTC and its nominated agencies. It is anticipated that new or renewal agreements may be undertaken by creating a separate SLA, with schedules and annexures as required, under this Agreement for each additional engagement.

3. Term and duration of the agreement

- This Agreement shall come into effect on _____ (hereinafter the "Effective Date") and shall, unless terminated earlier in accordance with its terms, expire on the date on which this Agreement expires, which shall be a period of three years (extendable up to 2 years on satisfactory performance of SI) from 'Go-Live' of Project and any extended period notified by OSRTC.
- In the case of such extension of contract beyond the stipulated period, the warranties, Performance Bank Guarantee, exit management protocol, insurance etc. shall be extended for equivalent period.
- The Term, for the purposes of any payments to SI, does not include (a) any extension arising out of breach of any obligations by SI, (b) unless otherwise agreed, time duration for implementation of exit management plan.

4. Conditions precedent & effective date

4.1. Provisions to take effect upon fulfilment of Conditions Precedent

Subject to express terms to the contrary, the rights and obligations under this Agreement (at any point of time during the Agreement) shall take effect only upon fulfilment of all the Conditions Precedent set out below. However, OSRTC may at any time at its sole discretion waive fully or partially any of the Conditions Precedent for the SI. For the avoidance of doubt, it is expressly clarified that the obligations of the Parties (or its nominated agencies) under this Agreement shall commence from the fulfilment of the Conditions Precedent as set forth below.

4.2. Conditions:

A. Conditions Precedent of the System Integrator

The System Integrator shall be required to fulfill the Conditions Precedent which are as follows:

- To provide a Performance Security/Guarantee and other guarantees/ payments as and

when required to OSRTC or its nominated agencies; and

- To provide OSRTC or its nominated agencies certified true copies of its constitutional documents and board resolutions authorizing the execution, delivery, and performance of this Agreement by the System Integrator.

B. Conditions Precedent of OSRTC

OSRTC shall be required to fulfil the Conditions Precedent which are as follows:

- Approval of the Project by a Competent Authority, etc.
- Necessary clearances (if any).
- Handing over of site; and

For the avoidance of doubt, it is expressly clarified that the obligations of the Parties except the financial obligations of OSRTC under this Agreement shall commence from the fulfilment of the Conditions Precedent as set forth above.

4.3. Extension of time for fulfilment of Conditions Precedent

The Parties may, by mutual agreement extend the time for fulfilling the Conditions Precedent and the Term of this Agreement.

4.4. Non-fulfilment of the SI's Conditions Precedent

- If any of the Conditions Precedent of the System Integrator have not been fulfilled within 15 days of signing of this Agreement and the same have not been waived fully or partially by OSRTC or its nominated agencies, this Agreement shall cease to exist.
- If the Agreement fails to come into effect on account of non-fulfilment of the System Integrator's Conditions Precedent, OSRTC or its nominated agencies shall not be liable in any manner whatsoever to the System Integrator and OSRTC shall forthwith forfeit the Performance Guarantee.
- If possession of any of OSRTC or its nominated agencies facilities has been delivered to the System Integrator prior to the fulfilment of the Conditions Precedent, upon the termination of this Agreement such shall immediately revert to OSRTC or its nominated agencies, free and clear from any encumbrances or claims.

5. Obligations under the SLA

- The SLA shall be a separate contract in respect of this Agreement and shall be entered into concurrently with this Agreement between OSRTC and SI.
- In relation to any future SLA entered between the Parties, each of the Parties shall observe and perform the obligations set out herein.

5.1. Change of Control

- In the event of a change of control of the SI during the Term, the SI shall promptly notify OSRTC of the same in the format set out as in this Agreement.
- If the net worth of the surviving entity is less than that of SI prior to the change of control, OSRTC may within 30 days of becoming aware of such change in control, require a replacement of existing Performance Guarantee furnished by the SI from a guarantor acceptable to OSRTC (which shall not be SI or entities)

- If such a guarantee is not furnished within 30 days of OSRTC requiring the replacement, OSRTC may exercise its right to terminate the SLA and/ or this Agreement within a further 30 days by written notice, to become effective as specified in this notice.
- Pursuant to termination, the effects of termination as set out in this Agreement shall follow.
- For the avoidance of doubt, it is expressly clarified that the internal reorganization of the SI shall not be deemed an event of a change of control for purposes of this Clause unless the surviving entity is of less net worth than the predecessor entity.

5.2. Final testing and certification

The Project shall be governed by the mechanism of final acceptance testing and certification to be put into place by OSRTC and Service Integrator as under:

- Final testing and certification criteria will lay down a set of guidelines following internationally accepted norms and standards for testing and certification for all aspects of project development and implementation covering software, hardware and networking including the processes relating to the design of solution architecture, design of systems and sub- systems, coding, testing, business process description, documentation, version control, change management, security, service oriented architecture, performance in relation to compliance with SLA metrics, interoperability, scalability, availability and compliance with all the technical and functional requirements of the RFP and this Agreement;
- Final testing and certification criteria will be finalized from the development stage to ensure that the guidelines are being followed and to avoid large scale modifications pursuant to testing done after the application is fully developed.
- Final testing and certification criteria will consider conducting specific tests on the networking, security, and all other aspects.
- Final testing and certification criteria will establish appropriate processes for notifying the SI of any deviations from the norms, standards, or guidelines at the earliest instance after taking cognizance of the same to enable the SI to take corrective action etc.
- The parties shall each ensure that the range of the services under the SLA shall not be varied, reduced, or increased except with the prior written agreement between OSRTC and SI in accordance with the Change Control Schedule set out in Schedule II of this Agreement. Save for the express terms of the Terms of Payment Schedule set out as Schedule VI of this Agreement, OSRTC and its users may purchase category of services that may become necessary as per the change control schedule II of this agreement, without the need to go for separate procurement process.

6. Representations and warranties

6.1. Representations and warranties of the SI

The SI represent and warrant to the OSRTC that:

- It has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and performs its obligations, under this agreement and carry out the transactions contemplated hereby.
- It is a competent provider of a variety of information technology and business process

management services.

- It has taken all necessary corporate and other actions under laws applicable to its business to authorize the execution and delivery of this Agreement and to validly exercise its rights and perform its obligations under this Agreement.
- From the Effective Date, it will have the financial standing and capacity to undertake the Project in accordance with the terms of this Agreement.
- In providing the Services, it shall make reasonable efforts not to cause any unnecessary disruption to OSRTC's normal business operations.
- This Agreement has been duly executed by it and constitutes a legal, valid, and binding obligation, enforceable against it in accordance with the terms hereof, and its obligations under this Agreement shall be legally valid, binding, and enforceable against it in accordance with the terms hereof.
- The information furnished in the tender documents and as updated on or before the date of this Agreement is to the best of its knowledge and belief true and accurate in all material respects as at the date of this Agreement.
- The execution, delivery and performance of this Agreement shall not conflict with, result in the breach of, constitute a default by any of the terms of its Memorandum and Articles of Association or any Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree, or order to which it is a party or by which it or any of its properties or assets is bound or affected.
- There are no material actions, suits, proceedings, or investigations pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform any of its material obligations under this Agreement.
- It has no knowledge of any violation or default with respect to any order, writ, injunction or decree of any court or any legally binding order of any Government Instrumentality which may result in any adverse effect on its ability to perform its obligations under this Agreement and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its Agreement.
- It has complied with Applicable Laws in all material respects and has not been subject to any fines, penalties, injunctive relief or any other civil or criminal liabilities which in the aggregate have or may have an Adverse Effect on its ability to perform its obligations under this Agreement.
- No representation or warranty by it contained herein or in any other document furnished by it to OSRTC in relation to the required consents contains or shall contain any untrue or misleading statement of material fact or omits or shall omit to state a material fact necessary to make such representation or warranty not misleading; and
- No sums, in cash or kind, have been paid or shall be paid, by it or on its behalf, to any person by way of fees, commission or otherwise for entering into this Agreement or for influencing or attempting to influence any officer or employee of OSRTC in connection therewith. For this purpose, OSRTC will sign integrity pact separately with SI enclosed with this agreement.

6.2. Representations and warranties of OSRTC

OSRTC represent and warrant to the SI that:

- It has full power and authority to execute, deliver and perform its obligations under this Agreement and to carry out the transactions contemplated herein and that it has taken all actions necessary to execute this Agreement, exercise its rights and transactions contemplated hereby.
- It has taken all necessary actions under the applicable laws to authorize the execution, delivery, and performance of this agreement and to validly exercise its rights and perform its obligations under the agreement.
- It has the financial standing and capacity to perform its obligations under this agreement.
- It is the subject to the law of India, and hereby expressly and irrevocably waives any immunity in any jurisdiction in respect of the agreement or matters arising thereunder including any obligations, liability, or responsibility hereunder.
- This Agreement has been duly executed by it and constitutes a legal, valid, and binding obligation enforceable against it in accordance with the terms hereof and its obligations under this Agreement shall be legally valid, binding, and enforceable against it in accordance with the terms thereof.
- The execution, delivery and performance of this Agreement shall not conflict with, result in the breach of, constitute a default under, or accelerate performance required by any of the Applicable Laws or any covenant, contract, agreement, arrangement, understanding, decree, or order to which it is a party or by which it or any of its properties or assets is bound or affected.
- There are no actions, suits or proceedings pending or, to its knowledge, threatened against it at law or in equity before any court or before any other judicial, quasi-judicial or other authority, the outcome of which may result in the default or breach of this Agreement or which individually or in the aggregate may result in any material impairment of its ability to perform its material (including any payment) obligations under this Agreement.
- It has no knowledge of any violation or default with respect to any order, writ, injunction or any decree of any court or any legally binding order of any Government Instrumentality which may result in any Adverse Effect on OSRTC or its nominated agencies ability to perform its obligations under this Agreement and no fact or circumstance exists which may give rise to such proceedings that would adversely affect the performance of its obligations under this Agreement;
- It has complied with Applicable Laws in all material respects.
- All information provided by it in the RFP in connection with the Project is, to the best of its knowledge and belief, true and accurate in all material respects; and
- Upon the SI performing the covenants herein, it shall not at any time during the term hereof, interfere with peaceful exercise of the rights and discharge of the obligations by the SI, in accordance with this Agreement.

7. Obligations of OSRTC

Without prejudice to any other undertakings or obligations of OSRTC under this Agreement, OSRTC shall perform the following:

- To provide any support through personnel to test the system during the term.
- To provide any support through personnel and/or test data during development, rollout, steady state operation, as well as, for any change /enhancements in the system whenever required due to scope change that may arise due to business, delivery, or statutory/regulatory reasons.
- OSRTC shall provide the data (including in electronic form wherever applicable/available) to be

migrated.

- To authorize the SI to interact for implementation of the Project with external entities such as the authorized banks, trademark database etc.
- Provide prompt Deliverable feedback: OSRTC or its nominated agencies/ partners shall provide sign offs on the deliverable or its comments for changes. In case the OSRTC or its nominated agencies/ partners fails to respond and provide feedback on above stated submission, the deliverables or SLA and performance reports will be deemed accepted. Any subsequent rework post acceptance/ deemed acceptance would form the subject of a formal change request under the provisions of this Agreement.

8. Obligations of the SI

- It shall provide to OSRTC or its nominated agencies/ partners, the Deliverables as set out in this Agreement.
- It shall perform the Services as set out in this Agreement and in a good and work man like manner commensurate with industry and technical standards which are generally in effect for international projects and innovations pursuant thereon like those contemplated by this Agreement, and to comply with the applicable Service Levels set out with this Agreement.
- It shall ensure that the Services are being provided as per the Project Timelines set out in the RFP.

9. Use of assets by the SI

9.1. During the Term the SI shall:

- Take all reasonable and proper care of the entire hardware and software, network or any other information technology infrastructure components used for the Project and other facilities leased / owned / operated by the SI exclusively in terms of ensuring their usability for the delivery of the Services as per this Agreement (hereinafter the “Assets”) in proportion to their use and control of such assets.
- Keep all the tangible Assets in as good and serviceable condition (reasonable wear and tear excepted) as at the date the SI takes control of and/or first uses the Assets and during the entire Term of the Agreement.
- Ensure that any instructions or manuals supplied by the manufacturer of the Assets for use of the assets, and which are provided to the SI will be followed by the SI and any person who will be responsible for the use of the assets.
- Take such steps as may be properly recommended by the manufacturer of the Assets and notified to the SI or as may, in the reasonable opinion of the SI be necessary to use the Assets in a safe manner.
- Ensure that the Assets that are under the control of the SI, are kept suitably housed and in conformity with Applicable Law.
- Procure permission from OSRTC and any persons duly authorized by them to enter any land or premises on which the Assets are for the time being sited to inspect the same, subject to any reasonable third-party requirements.
- Not, knowingly, or negligently use or permit any of the assets to be used in contravention of any statutory provisions or regulation or in any way contrary to Applicable Law.

- Use best efforts to ensure that no lien, mortgage, hypothecation, or any other charge is created over the Assets. SI agrees that SI will inform OSRTC immediately if SI feels or comes to know that a charge may be / has been created over any Asset(s). In the event a charge is created over any of the Assets / Goods which are owned by OSRTC, OSRTC shall have the right to get the charge removed at the risk, cost, expense of the SI and SI shall make good all losses, damages, costs, fees, CESS, duties, etc. borne or suffered by OSRTC due to creation of such charge and/or in removal of such charge and/or in discharging the obligations for removal of such charge.
- Advertisement rights – purchase reserves the advertisement rights on components of ITMS system such as PIS system. Advertisement content shall be provided by the purchaser and system shall be able to publish the content provided by the purchaser across various channels such as LED screens, LCD screens, Mobile APP for commuters etc.
- Data generated through ITMS project (“project data”) shall be exclusively owned by purchaser and prior written consent from purchaser is necessary before sharing project data with any third party.

10. Access to OSRTC or locations

- For so long as the SI provides services to OSRTC location on a non-permanent basis and to the extent necessary, OSRTC shall, subject to compliance by the SI with any safety and security guidelines which may be provided by OSRTC and notified to the SI in writing, provide the SI with:
  - reasonable access with prior approval of OSRTC, in the same manner granted to OSRTC employees, to OSRTC twenty-four hours a day, seven days a week.
  - Reasonable workspace, access to office equipment as mutually agreed and other related support services in such location and at such other OSRTC location, if any, as may be reasonably necessary for the SI to perform its obligations hereunder and under the SLA.
- Access to locations, office equipment and services shall be made available to the SI on an “as is, where is” basis by OSRTC. The SI agrees to ensure that its employees, agents, and contractors shall not use the location, services and equipment referred to in RFP for the following purposes:
  - in a manner which constitutes a violation or infringement of the rights of any person, firm or company (including but not limited to rights of copyright or confidentiality).

11. Management phase

11.1. Governance

The review and management process of this Agreement shall be carried out in accordance with the Governance Schedule set out in Schedule V of this Agreement and shall cover all the management aspects of the Project, Use of Services

- OSRTC or its nominated agencies/ partners, will undertake and use the Services in accordance with any instructions or procedures as per the acceptance criteria as set out in the SLA or this Agreement or any agreement that may be entered into between the Parties from time to time.
- OSRTC or its nominated agencies/ partners shall be responsible for the operation and use of the Deliverables resulting from the Services.

11.2. Changes

Unless expressly dealt with elsewhere in this Agreement, any changes under or to this Agreement or under or tothe SLA shall be dealt with in accordance with the Change Control Schedule set out in Schedule II of this Agreement.

11.3. Security and Safety

- The SI shall comply with the technical requirements of the relevant security, safety and other requirements specified in the Information Technology Act or Telegraph Act including the regulations issued by dept. of telecom (wherever applicable), Security Manual of OSRTC as specifically stated in the RFP and follow the industry standards related to safety and security (including those as stated in the RFP), insofar as it applies to the provision of the Services/Deliverables under this Agreement.
- Each Party to the SLA/Agreement shall also comply with OSRTC or the Government of India's security standards and policies in force from time to time at each location of which OSRTC make the SI aware in writing insofar as the same apply to the provision of the Services.
- The Parties to the SLA/Agreement shall use reasonable endeavors to report forthwith in writing to each other all identified attempts (whether successful or not) by unauthorized persons (including unauthorized persons who are employees of any Party) either to gain access to or interfere with OSRTC or any of their nominee's data, facilities, or Confidential Information.
- The SI shall upon reasonable request by OSRTC as the case may be or their nominee(s) participate in regular meetings when safety and information technology security matters are reviewed.
- As per the provisions of the SLA or this Agreement, the SI shall promptly report in writing to OSRTC, any act or omission which they are aware that could have an adverse effect on the proper conduct of safety and information technology security at the facilities of OSRTC.

11.4. Co-operation

Except as otherwise provided elsewhere in this Agreement or the SLA, each Party ("***Providing Party***") to this Agreement or to the SLA undertakes promptly to provide the other Party ("***Receiving Party***") with all such information and co-operation which the Receiving Party reasonably requests, provided that such information andco-operation:

- does not require material expenditure by the Providing Party to provide the same.
- is reasonably required by the Receiving Party for it to comply with its obligations under this Agreement or the SLA.
- cannot be construed to be Confidential Information
- is capable of being provided by the Providing Party

Further, each Party agrees to co-operate with the contractors and subcontractors of the other Party as reasonably requested to accomplish the purposes of this Agreement.

12. Financial matters

12.1. Terms of Payment and Service Credits and Debits

- In consideration of the Services and subject to the provisions of this Agreement and of the SLA, OSRTC shall pay the SI for the Services rendered in pursuance of this Agreement, in accordance with the Terms of Payment Schedule set out as in this Agreement.

- Payments shall be subject to the application of liquidated damages (for period prior to "Go Live") or SLA penalties and its adjustments/corrections (for post "Go-Live") as may be provided for in the Agreement and the SLA from the relevant milestone(s).

[Note: OSRTC (on request from successful bidders) can look at having a separate mechanism for settling penalties/ service credits rather than the set off against the invoice as this could revenue recognition issues. However, the successful bidder must ensure that such settlement happens within a stipulated timeframe]

- Save and except as otherwise provided for herein or as agreed between the Parties in writing, OSRTC shall not be required to make any payments in respect of the Services (or, without limitation to the foregoing, in respect of the SI performance of any obligations under this Agreement or the SLA) other than those covered in Schedule VI of this Agreement. For the avoidance of doubt, it is expressly clarified that the payments shall be deemed to include all ancillary and incidental costs and charges arising during delivery of the Services including consultancy charges, infrastructure costs, project costs, implementation and management charges and all other related costs including taxes which are addressed in this Clause.

Invoicing and Settlement

- Subject to the specific terms of the SLA, the SI shall submit its invoices in accordance with the following principles.
    - OSRTC shall be invoiced by the SI for the Services Generally and unless otherwise agreed in writing between the Parties or expressly set out in the SLA, the SI shall raise an invoice as per this Agreement.
    - Any invoice presented in accordance with this clause shall be in a form as agreed with OSRTC.
- The SI alone shall invoice all payments after receiving due approval of completion of payment milestone from the competent authority. Such invoices shall be accurate and all adjustments to or changes in the terms of payment as stated in in this Agreement. The SI shall waive any charge for a Service that is not invoiced within six months after the end of the month in which the charge relating to such Service is (i) applicable or (ii) incurred or (iii) approved, whichever is later. SI shall provide details of such waivers on request from competent authority.
- Payment shall be made within 30 working days of the receipt of invoice along with supporting documents by OSRTC subject to subject to deduction of applicable liquidated damages and/or service credits/debits. The penalties are imposed on the SI as per the penalty criteria specified in the SLA
- OSRTC shall be entitled to delay or withhold payment of any invoice or part of it delivered by the SI as set out in this Agreement where OSRTC disputes/withholds such invoice or part of it provided that such dispute is bona fide. The withheld amount shall be limited to that which is in dispute. The disputed / withheld amount shall be settled in accordance with the escalation procedure as set out in this Agreement. Any exercise by OSRTC under this clause shall not entitle the SI to delay or withhold provision of the Services.
- The SI shall be solely responsible to make payment to its sub-contractors.

Tax

- OSRTC or its nominated agencies shall be responsible for withholding taxes from the amounts due and payable to the SI wherever applicable. The SI shall pay for all other taxes in connection with this Agreement, SLA, scope of work and any other engagement required to be undertaken

as a part of this Agreement, including, but not limited to, property, sales, use, excise, value-added, goods and services, consumption and other similar taxes or duties.

- OSRTC or its nominated agencies shall provide SI with the original tax receipt of any withholding taxes paid by OSRTC or its nominated agencies on payments under this Agreement. The SI agrees to reimburse and hold OSRTC harmless from any deficiency including penalties and interest relating to taxes that are its responsibility under this paragraph. For purposes of this Agreement, taxes shall include taxes incurred on transactions between and among OSRTC, the SI and third-party subcontractors.
- If, after the date of this Agreement, there is any change of rate of levy under the existing applicable laws of India with respect to taxes and duties, which are directly payable by OSRTC for providing the goods and services i.e. GST / service tax or any such other applicable tax from time to time, which increase or decreases the cost incurred by the Implementation Agency in performing the Services, then the remuneration and reimbursable expense otherwise payable to the SI under this Agreement shall be increased or decreased accordingly by correspondence between the Parties hereto, and corresponding adjustments shall be made to the ceiling amounts as specified. However, in case of any new or fresh tax or levy imposed after submission of the proposal the SI shall be entitled to reimbursement on submission of proof of payment of such tax or levy.
- The Parties shall cooperate to enable each Party to accurately determine its own tax liability and to minimize such liability to the extent legally permissible. In connection therewith, the Parties shall provide each other with the following:
    - any resale certificates.
    - any relevant information regarding out-of-state or use of materials, equipment, or services; and any direct pay permits, exemption certificates or information reasonably requested by the other Party.

Note for Clarification:

- “Designated Date” shall mean the last working date from the applicability of this clause. In case Designated Date falls on a holiday, then the immediately succeeding day shall be treated as the Designated Date.

13. Acceptance of Deliverables and Testing

13.1. Acceptance of deliverables

The successful completion of the Project requires the acceptance by OSRTC of all deliverables prepared and delivered pursuant to the Project. Upon completion of a Deliverable, SI will notify OSRTC in writing that the deliverables have been completed and in the case of deliverables constituted of software, hardware, and networking (“Operational Deliverables”), tested and/or certified as being ready for acceptance (“Ready for Acceptance”) by OSRTC. Promptly after receiving such notice, OSRTC will evaluate the deliverable for acceptance in accordance with specific provisions provided in the RFP. The acceptance process outlined below shall not be deemed to extend the Timelines / scheduled completion date for any deliverable specified in the RFP.

13.2. Acceptance Procedure

Acceptance by OSRTC (“Acceptance”) requires that the Deliverables be confirmed in writing by OSRTC to meet applicable acceptance criteria (“Acceptance Criteria”) which, in the case of

Operational Deliverables, will include the successful completion of agreed acceptance and performance testing and, in the case of the System as a whole, will include meeting the specifications, performance standards and functional requirements set out in the RFP. In the case of Deliverables that are component parts of the System, in addition to acceptance of the component deliverables, the system will also be subject to acceptance in its entirety. SI shall prepare and propose the test procedures, which shall be described in the acceptance criteria for each deliverable and shall be subject to agreement by OSRTC. While designing the acceptance test procedures the requirements as mentioned in volume II of RFP need to be adhered. The Acceptance tests and test procedures shall be sufficiently broad in scope and rigorous to verify that the system and all other deliverables meet all applicable specifications, acceptance criteria and performance requirements, including assurance that the deliverables and the system meet such tests of operational integrity as may be reasonably required by OSRTC. In the case of the system, the acceptance tests shall consist of unit tests, a system test, and/or stress test acceptance procedures for written deliverables (which are all deliverables other than Operational Deliverables) and Operational Deliverables are as follows:

Written Deliverables

The SI may submit interim drafts of written deliverables (e.g., system designs and documentation) to OSRTC for review. OSRTC agrees to review each interim draft within a reasonable period after receiving it from the SI. When the SI delivers a final written deliverable to OSRTC, OSRTC will have the opportunity to review such written deliverable for an acceptance period of seven (7) days or such other period as is stated in the RFP or the agreed Project Plan (the “Acceptance Period”). In all cases, OSRTC’s obligation to review a written deliverable within the applicable Acceptance Period will be contingent on such written deliverable being delivered to OSRTC as scheduled. If and to the extent any written Deliverable is delivered earlier or later than scheduled, the Acceptance Period for such written Deliverable shall be extended as reasonably necessary to accommodate the availability of OSRTC personnel responsible for reviewing such deliverable.

Similarly, if and to the extent multiple written deliverables are delivered to OSRTC within an Acceptance Period, the Acceptance Period for all such written Deliverables shall be extended as reasonably necessary to accommodate the availability of OSRTC personnel responsible for reviewing them.

OSRTC agrees to notify the SI in writing by the end of the acceptance Period either stating that the applicable written deliverable is accepted / rejected in the form delivered by the SI or describing with reasonable particularity any deficiencies that must be corrected prior to acceptance of such written deliverable. If the SI does not receive any such notice from OSRTC by the end of the Acceptance Period, the SI shall promptly notify OSRTC in writing that no such notice has been received. If the SI does not receive the required notice within seven (7) days after OSRTC receives such written notification from the SI, such written Deliverable will be deemed to be accepted by OSRTC

If OSRTC delivers to the SI a timely notice of rejection/deficiencies, the SI will correct the described deficiencies as quickly as possible and, in any event, within ten (10) days after OSRTC notifies the SI of the rejection/deficiencies (unless otherwise specified in the agreed Project Plan). Upon receipt of a corrected written deliverable from the SI, OSRTC will have a period of seven (7) days to review the corrected written deliverable.

Operational Deliverables

- To the extent not already specified in the RFP or agreed Project Plan, prior to the date on which the SI is scheduled to deliver each Operational Deliverable to OSRTC, both the SI and OSRTC will agree upon the testing procedures for the operational Deliverable, including without limitation

detailed test cases and expected results (the “Acceptance Tests”). The Acceptance Tests will be designed to determine whether the Operational Deliverable contains any defects. OSRTC will have the opportunity during the Acceptance Period to evaluate and test each Operational Deliverable in accordance with the following procedures by executing the Acceptance Tests.

- When the SI has completed an Operational Deliverable, it will deliver the Operational Deliverable at the Installation Site (if not already there), install such Deliverable (if not already installed), and perform an installation test reasonably acceptable to OSRTC to verify that the Deliverable has been properly delivered and installed. The SI shall notify OSRTC when the Operational Deliverable is ‘Ready for Acceptance’, provided that, unless otherwise agreed, such notice shall not occur prior to the successful completion by the SI of any installation tests. Such notice will start the Acceptance Period, which will be fifteen (15) days or such other period as is stated in the RFP or agreed Project Plan. As was the case with written Deliverables, OSRTC’s obligation to review any Operational Deliverable within the applicable Acceptance Period will be contingent on such Operational Deliverable being delivered to OSRTC as scheduled. If and to the extent any Operational Deliverable is delivered earlier or later than scheduled, the Acceptance Period for such Operational Deliverable shall be extended as reasonably necessary to accommodate the availability of the OSRTC personnel responsible for reviewing such Operational Deliverable. Similarly, if and to the extent multiple Operational Deliverables are delivered to OSRTC within an Acceptance Period, the Acceptance Period for all Operational Deliverables shall be extended as reasonably necessary to accommodate the availability of the OSRTC personnel responsible for reviewing them.
- OSRTC shall notify the SI in writing by the end of the Acceptance Period stating that the Operational Deliverable is accepted/rejected in the form delivered by the SI or describing the defects. If the SI does not receive any notice of defects from OSRTC by the end of the Acceptance Period, the SI shall promptly notify OSRTC in writing that no such notice was received. If SI does not receive a notice of defects within 7 days after OSRTC receives such written notification from the SI, such Operational Deliverable will be deemed accepted by OSRTC.
- If OSRTC determines during the Acceptance Period that the Operational Deliverable as delivered by the SI deviates from its approved specifications or otherwise fails to successfully complete applicable Acceptance Tests (or a defect), OSRTC will inform the SI in writing, describing the defects in sufficient detail to allow the SI to recreate/rectify them. The SI will correct any defects in an Operational Deliverable as quickly as possible after receiving OSRTC’s notice of the defects and, in any event, within ten (10) days after receiving such notice (unless otherwise specified in the Project Plan/RFP) and provide the corrected Operational Deliverable to OSRTC for re-testing within such ten (10) day period.
- OSRTC will have reasonable additional period after receipt of corrected Operational deliverables to re-test it to confirm its proper functioning. The SI will correct any further defects identified by OSRTC during the re-test as quickly as possible, but in no event more than ten (10) days after OSRTC notifies the SI of the further defects, unless otherwise specified in the agreed Project Plan or RFP or agreed by OSRTC.

Correction of Deficiencies in Deliverables:

The SI is unable to correct all deficiencies preventing Acceptance of a deliverable for which it is responsible after a reasonable number of repeated efforts (but not more than three (3), OSRTC may at its election:

- Allow the SI to continue its efforts to make corrections.

- Accept the deliverable with its deficiencies and deduct such proportionate amounts from the SIs fees as deemed appropriate by OSRTC.
- Terminate this Agreement for cause in accordance with the procedures set forth in this document (except that OSRTC is under no obligation to provide the SI any further opportunity to cure) and recover its damages subject to the limitations set forth in this Agreement.

13.3. Acceptance

OSRTC shall be deemed to have accepted the Deliverables and/or System upon the date of delivery to the SI by OSRTC of a notice (the "Acceptance Notice") to that effect.

14. Termination and suspension

14.1. Material Breach

- If either Party believes that the other Party is in Material Breach of its obligations under this Agreement, such aggrieved Party may terminate this Agreement upon giving a one month's notice for curing the Material Breach to the other Party. In case the Material Breach continues, after the notice period, OSRTC or SI, as the case may will have the option to terminate the Agreement. Any notice served pursuant to this Clause shall give reasonable details of the Material Breach, which could include the following events.
    - If the SI is not able to deliver the services as per the SLAs defined in RFP which translates into Material Breach, then OSRTC may serve 30 days written notice for curing this Material Breach. In case the Material Breach continues, after the expiry of such notice period, OSRTC will have the option to terminate this Agreement. Further, OSRTC may after affording a reasonable opportunity to the SI to explain the circumstances leading to such a breach.
    - If there is a Material Breach by the Purchaser or its nominated agencies which results in not providing support for effecting data migration or not providing the certification of User Acceptance, then the Implementation Agency will give a one month's notice for curing the Material Breach to the Purchaser. After the expiry of such notice period, the Implementation Agency will have the option to terminate the Agreement.
- OSRTC may by giving a one month's written notice, terminate this Agreement if a change of control of the SI has taken place. For the purposes of this Clause, in the case of SI, change of control shall mean the events stated, and such notice shall become effective at the end of the notice period as set out in this agreement.
- If SI undergoes such a change of control, OSRTC may, as an alternative to termination, require a full Performance Guarantee for the obligations of SI by a guarantor acceptable to OSRTC or its nominated agencies. If such a guarantee is not furnished within 30 days of OSRTC's demand, OSRTC may exercise its right to terminate this Agreement in accordance with this Clause by giving 15 days further written notice to the SI.
- The termination provisions set out in this Clause shall apply mutatis mutandis to the SLA.

14.2. Termination for Convenience

- OSRTC may at any time terminate the Contract for any reason by giving the SI a notice of termination by giving 90 days prior written notice that refers to this clause
- Upon receipt of the notice of termination under this clause, the SI shall either as soon as reasonably practical or upon the date specified in the notice of termination:

- cease all further work, except for such work as OSRTC may specify in the notice of termination for the sole purpose of protecting that part of the System already executed, or any work required to leave the site in a clean and safe condition.
- terminate all subcontracts, except those to be assigned to OSRTC pursuant to Clause 15.2 (d) below.

- remove all SI's Equipment from the site, repatriate the SI's and its Subcontractors' personnel from the site, remove from the site any wreckage, rubbish, and debris of any kind.
- in addition, the SI shall:
  - deliver to OSRTC the parts of the System executed by the SI up to the date of termination.
  - to the extent legally possible, assign to OSRTC all right, title, and benefit of the SI to the System, or Subsystem, as at the date of termination, and, as may be required by the Purchaser, in any subcontracts concluded between the SI and its Subcontractors.
  - deliver to OSRTC all non-proprietary drawings, specifications, and other documents prepared by the SI or its Subcontractors as of the date of termination in connection with the System.

14.3. Effects of termination

- If OSRTC terminates this Agreement pursuant to failure on the part of the SI to comply with the conditions as contained in this Clause and depending on the event of default, Performance Guarantee furnished by SI may be forfeited.
- Upon termination of this Agreement, the Parties will comply with the Exit Management Schedule set out as Schedule III of this Agreement.
- If OSRTC or the SI terminates this Agreement, the compensation will be decided in accordance with the Exit Management Schedule set out as Schedule III of this Agreement.
- All payments under this clause shall be payable only after the SI has complied with and completed the transition and exit management as per the Exit Management Plan to the satisfaction of OSRTC. In case of expiry of the Agreement, the last due payment shall be payable to the SI after it has complied with and completed the transition and exit management as per the Exit Management Plan to the satisfaction of OSRTC.
- In the event of termination of the Contract, OSRTC shall pay to the SI the following amounts:
  - the Contract Price, properly attributable to the parts of the System executed by the SI as of the date of termination.
  - the costs reasonably incurred by the SI in the removal of the SI's Equipment from the site and in the repatriation of the SI's and its Subcontractors' personnel.
  - any amount to be paid by the SI to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges.
  - costs incurred by the SI in protecting the System and leaving the site in a clean and safe condition pursuant to Clause 15.2
  - the cost of satisfying all other obligations, commitments, and claims that the SI may in good faith have undertaken with third parties in connection with the Contract and that are not covered by Clause 15.3 (d) above.

14.4. Termination of this Agreement due to bankruptcy of SI

OSRTC may serve written notice on SI at any time to terminate this Agreement with immediate effect if the SI reporting an apprehension of bankruptcy to OSRTC or its nominated agencies.

14.5. Suspension

- The SI shall, if ordered in writing by OSRTC, temporarily suspend the performance of any services or any part thereof under this Agreement for such specified/ ordered period and time. OSRTC shall inform the SI about such suspension at least 30 days in advance. The SI shall not be entitled to claim compensation for any loss or damage sustained by it by reason of such temporary suspension of the work for a continuous period of 30 days. OSRTC may consider suitable compensation to the SI in event of suspension extending beyond a continuous period of 30 days. An extension of time for completion, corresponding with the delay caused by any such suspension of the works as aforesaid shall be granted to the SI, if written request for the same is made. In case the suspension of works lasts for a period of more than 3 months, the SI shall have the right to request OSRTC to pay reasonable immobilization and mobilization charges as may be consented to by OSRTC.
- If OSRTC suspends the progress of work for a period more than 30 days in aggregate, rendering the SI to extend its performance guarantee then OSRTC shall bear only the cost of extension of such bank guarantee for such extended period restricted to the normal bank rates as applicable in the banking procedures subject to the SI producing the requisite evidence from the bank concerned.
- OSRTC may suspend this Agreement only (i) prior to giving consent to the SI for purchase of goods and production licenses; and (ii) after the Go-Live.
- Notwithstanding the foregoing in clause 16, Order for Infrastructure items including Hardware, Software licenses and other system software etc. shall be placed by the SI only after receipt of written confirmation from OSRTC in this regard. OSRTC may request the SI for deferment of procurement of such components for maximum period of twelve months. In such case the SI will be paid a pre-defined maintenance cost for the application support and the team deployed. In case OSRTC requests for deferment of procurement of infrastructure the timelines will extend accordingly. Also, the SLA relating to infrastructure will apply from the date when OSRTC gives intimation to the SI to start procurement.

15. Indemnification and Limitation of liability

- SI (the "Indemnifying party) undertakes to indemnify OSRTC (the "Indemnified Party") from and against all Losses on account of bodily injury, death or damage to tangible personal property arising in favor of any person, corporation, or other entity (including the Indemnified Party) attributable to the Indemnifying Party's negligence or willful default in performance or non-performance under this Agreement.
- If the Indemnified Party promptly notifies Indemnifying Party in writing of a third-party claim against Indemnified Party that any Service provided by the Indemnifying Party infringes a copyright, trade secret or patents incorporated in India of any third party, Indemnifying Party will defend such claim at its expense and will pay any costs or damages that may be finally awarded against indemnified Party.
- Indemnifying Party will not indemnify the Indemnified Party, however, if the claim of infringement is caused by Indemnified Party’s misuse or modification of the Service.

- Indemnified Party's failure to use corrections or enhancements made available by the Indemnifying Party.
- Indemnified Party's use of the Service in combination with any product or information not owned or developed by Indemnifying Party.
- Indemnified Party's distribution, marketing or use for the benefit of third parties of the Service; or information, direction, specification, or materials provided by Indemnified Party, or any third party contracted to it. If any Service is or likely to be held to be infringing, Indemnifying Party shall at its expense and option procure the right for Indemnified Party to continue using it, replace it with a non-infringing equivalent, modify it to make it non-infringing. The foregoing remedies constitute Indemnified Party's sole and exclusive remedies and Indemnifying Party's entire liability with respect to infringement.
- The indemnities set out in Clause 16 shall be subject to the following conditions:
    - the Indemnified Party as promptly as practicable informs the Indemnifying Party in writing of the claim or proceedings and provides all relevant evidence, documentary or otherwise.
    - the Indemnified Party shall, at the cost of the Indemnifying Party, give the Indemnifying Party all reasonable
    - assistance in the Defense of such claim including reasonable access to all relevant information, documentation, and personnel provided that the Indemnified Party may, at its sole cost and expense, reasonably participate, through its attorneys or otherwise, in such Defense.
    - if the Indemnifying Party does not assume full control over the Defense of a claim as provided in this Article, the Indemnifying Party may participate in such Defense at its sole cost and expense, and the Indemnified Party will have the right to defend the claim in such manner as it may deem appropriate, and the cost and expense of the Indemnified Party will be included in Losses.
    - the Indemnified Party shall not prejudice, pay or accept any proceedings or claim, or compromise any proceedings or claim, without the written consent of the Indemnifying Party.
    - all settlements of claims subject to indemnification under this Clause will:
    - be entered into only with the consent of the Indemnified Party, which consent will not be unreasonably withheld and include an unconditional release to the Indemnified Party from the claimant or plaintiff for all liability in respect of such claim; and
    - include any appropriate confidentiality agreement prohibiting disclosure of the terms of such settlement.
    - the Indemnified Party shall account to the Indemnifying Party for all awards, settlements, damages and costs (if any) finally awarded in favor of the Indemnified Party which are to be paid to it in connection with any such claim or proceedings.
    - the Indemnified Party shall take steps that the Indemnifying Party may reasonably require to mitigate or reduce its loss because of such a claim or proceedings.
    - if the Indemnifying Party is obligated to indemnify an Indemnified Party pursuant to this Article, the Indemnifying Party will, upon payment of such indemnity in full, be subrogated to all rights and defenses of the Indemnified Party with respect to the claims to which such indemnification relates; and
    - if a Party makes a claim under the indemnity set out under Clause 16.1 above in respect of

any Loss or Losses, then that Party shall not be entitled to make any further claim in respect of that Loss or Losses (including any claim for damages).

- The liability of either Party (whether in contract, tort, negligence, strict liability in tort, by statute or otherwise) for any claim in any manner related to this Agreement, including the work, deliverables or Services covered by this Agreement, shall be the payment of direct damages only which shall in no event exceed one time the total contract value payable under this Agreement. The liability cap given under this Clause 16.3 shall not be applicable to the indemnification obligations set out in Clause 16 and breach of clause 12 - 'Safety and Security' and clause 18 - 'Confidentiality'.
- In no event shall either party be liable for any consequential, incidental, indirect, special or punitive damage, loss or expenses (including but not limited to business interruption, lost business, lost profits, or lost savings) nor for any third-party claims (other than those set-forth in Clause 16.1) even if it has been advised of their possible existence.
- The allocations of liability in this Section 16 represent the agreed and bargained-for understanding of the parties and compensation for the Services reflects such allocations. Each Party has a duty to mitigate the damages and any amounts payable under an indemnity that would otherwise be recoverable from the other Party pursuant to this Agreement by taking appropriate and commercially reasonable actions to reduce or limit the amount of such damages or amounts.

16. Force majeure

16.1. Definition of Force Majeure

The SI or OSRTC, shall be entitled to suspend or excuse performance of its respective obligations under this Agreement to the extent that such performance is impeded by an event of force majeure ("Force Majeure"). "Force Majeure" shall mean any event beyond the reasonable control of OSRTC or of the SI and which is unavoidable notwithstanding the reasonable care of the party affected.

16.2. Force Majeure events

A Force Majeure shall include, without limitation, the following:

- war, hostilities, or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy, and civil war.
- strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine, and plague.
- earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear and pressure waves, or other natural or physical disaster.

- If either party is prevented, hindered, or delayed from or in performing any of its obligations under theContract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances of the event of Force Majeure within fourteen (14) days after the occurrence of such event.
- The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered, or

delayed. The time for achieving Final Acceptance shall be extended.

- The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect of the event of Force Majeure upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either party's right to terminate the Contract.
- No delay or non-performance by either party to this Contract caused by the occurrence of any eventof Force Majeure shall:
  - constitute a default or breach of the contract.
  - give rise to any claim for damages or additional cost or expense occasioned by the delay or non-performance. if, and to the extent that, such delay or non-performance is caused by the occurrence of an event of Force Majeure.
- If the performance of the Contract is substantially prevented, hindered, or delayed for a single period of more than sixty (60) days on account of one or more events of Force Majeure during the time covered by the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which, either party may terminate the Contract by giving a notice to the other.
- In the event of termination, the rights, and obligations of OSRTC and the SI shall be as specified in the clause titled Termination.
- Force Majeure shall not apply to any obligation of OSRTC to make payments to the SI under this Contract.
- For the avoidance of doubt, it is expressly clarified that the failure on the part of the SI under this Agreement or the SLA to implement any disaster contingency planning and back-up and other data safeguards in accordance with the terms of this Agreement or the SLA against natural disaster, fire, sabotage, or other similar occurrence shall not be deemed to be a Force Majeure event. For the avoidance of doubt, it is further clarified that any negligence in performance of Services which directly causes any breach of security like hacking aren't the forces of nature and hence wouldn't be qualified under the definition of "Force Majeure". In so far as applicable to the performance of Services, SI will be solely responsible to complete the risk assessment and ensure implementation of adequate security hygiene, OSRTC practices, processes, and technology to prevent any breach of security and any resulting liability therefrom (wherever applicable).

17. Confidentiality

- OSRTC or its nominated agencies shall allow the SI to review and utilize highly confidential public records and the SI shall maintain the highest level of secrecy, confidentiality, and privacy with regard thereto.
- Additionally, the SI shall keep confidential all the details and information about the Project, including systems, facilities, operations, management, and maintenance of the systems/facilities.
- OSRTC shall retain all rights to prevent, stop and if required take the necessary punitive action against the SI regarding any forbidden disclosure.
- The SI shall execute a corporate non-disclosure agreement with OSRTC in the format provided by OSRTC and shall ensure that all its employees, agents and sub-contractors involved in the project execute individual non-disclosure agreements, which have been duly approved by OSRTC with respect to this Project.

- For the avoidance of doubt, it is expressly clarified that the aforesaid provisions shall not apply to the following information:
  - information already available in the public domain.
  - information which has been developed independently by the SI.
  - Information which has been received from a third party who right to disclose the had the aforesaid information.
  - Information which has been disclosed to the public pursuant to a court order.
- To the extent the SI shares its confidential or proprietary information with OSRTC for effective performance of the Services, the provisions shall apply mutatis mutandis on OSRTC.
- Notwithstanding anything to the contrary mentioned hereinabove, the SI shall have the right to share the Letter of Intent / work order provided to it by OSRTC in relation to this Agreement, with its prospective purchasers solely for the purpose of and with the intent to evidence and support its work experience under this Agreement.

18. Audit, Access, and Reporting

The SI shall allow access to OSRTC to all information which is in the possession or control of the SI, and which relates to the provision of the Services as set out in the Audit, Access, and Reporting Schedule and which is reasonably required by OSRTC to comply with the terms of the Audit, Access and Reporting Schedule set out as Schedule IV of this Agreement. Such audit rights shall be conducted once in six months.

19. Intellectual Property Rights

- Products and fixes: All products and related solutions and fixes provided pursuant to this work order shall be licensed according to the terms of the license agreement packaged with or otherwise applicable to such product. SI would be responsible for arranging licensed associated with products. “Product means any computer code, web-based services or materials comprising commercially released, pre-sales or beta products (whether licensed for a free or no charge) and any derivatives of the foregoing which are made available to OSRTC for license which is published by product owner or its affiliates, or a third party. “Fixes” means product fixes that are either released generally (such as commercial product service packs) or that are provided to you when performing services (such as workarounds, patches, bug fixes, beta fixes and beta builds) and any derivatives of the foregoing.
- Bespoke development: Subject to the provisions below, upon payment, the IPR rights for any bespoke development done during the implementation of the project will lie with OSRTC.
- Pre-existing work: All IPR including the source code and materials developed or otherwise obtained independently of the party under this agreement (“Pre-work”) including any efforts existing enhancement or modification thereto shall remain the sole property of that party. During the performance of the services for this agreement, each party grants to the other party (and their sub- contractors as necessary) a non-exclusive license to use, reproduce and modify any of its pre- existing work provided to the other party solely for the performance of such services for duration of the Term of this Agreement. Except as may be otherwise explicitly agree to in a statement of services, upon payment in full, the SI should grant OSRTC a non-exclusive, perpetual, fully paid-up license to use the pre-existing work in the form delivered to OSRTC as part of the service or deliverables only for its internal business operations. Under such license, either of parties will have no right to sell the pre-existing work of the other party to a Third Party.

OSRTC's license to pre-existing work is conditioned upon its compliance with the terms of this Agreement and the perpetual license applies solely to the pre-existing work that bidder leaves with OSRTC at the conclusion of performance of the services.

- Residuals: In no event shall SI be precluded from independently developing for itself, or for others, anything, whether in tangible or non-tangible form, which is competitive with, or like, the deliverables, set out in this Agreement or Annexure. In addition, subject to the confidentiality obligations, SI shall be free to use its general knowledge, skills and experience, and any ideas, concepts, know-how, and techniques that are acquired or used while providing the Services.

20. Warranty

- The SI warrants that the project, including all the system(s), and goods supplied pursuant to the agreement, shall be free from any defect or deficiency in the material, design, engineering, and workmanship that prevent the system and/or any of its sub-system(s). Commercial warranty provisions of products supplied under the agreement shall apply to the extent they do not conflict with the provisions of this Agreement.
- The SI also warrants that the products, materials, and other goods supplied under the Agreement are new, unused, and incorporate all recent improvements in design that materially affect the systems or subsystem's ability to fulfill the technical requirements specified in the RFP.
- In addition, the SI warrants that all Goods components to be incorporated into the System form part of the SI/OEM's and/or Subcontractor's current product lines.
- The warranty period shall commence from the date of Final Acceptance of the entire system (end of Phase II as per Volume 2 of this RFP) or on expiry of the products commercial warranty, whichever is earlier and shall extend for as follows:

Component	Period
Hardware	Till the end of Agreement
COTS Software	2-year post completion of the agreement
Bespoke Software	2-year post completion of the agreement

- If during the warranty period any defect or deficiency is found in the material, design and performance/workmanship of the Project and other Services provided by the SI, the SI shall promptly, in consultation and agreement with Purchaser, and at the Implementation Agency's sole cost repair, replace, or otherwise make good (as the SI shall, at its discretion, determine) such default, defect or deficiency as well as any damage to the system caused by such default, defect or deficiency. Any defective component, excluding hard disks, that has been replaced by the SI shall remain the property of the SI.
- The SI may, with the consent of OSRTC, remove from the site any product and other goods that are defective, if the nature of the defect, and/or any damage to the System caused by the defect, is such that repairs cannot be expeditiously carried out at the site. If the repair, replacement, or making good is of such a character that it may affect the efficiency of the System, OSRTC may give the SI notice requiring that tests of the defective part be made by the IA immediately upon completion of such remedial work, whereupon the SI shall carry out such tests. If such part fails the tests, the SI shall carry out further repair, replacement, or making good (as the case may be) until that part of the System passes such tests. The tests shall be agreed upon by OSRTC and

the SI.

- If the SI fails to commence the work necessary to remedy such defect or any damage to the System caused by such defect within a reasonable time period, OSRTC may, following notice to the SI, proceed to do such work or contract a third party (or parties) to do such work, and the reasonable costs incurred by OSRTC in connection with such work shall be paid to OSRTC by the SI or may be deducted by the OSRTC from any amount due to the SI.
- If the System or any of its sub-systems cannot be used by reason of such default, defect or deficiency and/or making good of such default, defect or deficiency, the warranty period for the Project shall be extended by a period equal to the period during which the Project or any of its system could not be used by OSRTC because of such defect and/or making good of such default, defect or deficiency.
- Items substituted for defective parts of the System during the Warranty Period shall be covered by the Warranty for the remainder of the Warranty Period applicable for the part replaced or three (3) months, whichever is greater.
- The SI shall have no liability in the case of breach of this warranty due to (i) use of the deliverables on any environment (hardware or software) other than the environment recommended or approved by the SI, (ii) the combination, operation, or use of some or all of the deliverables with information, software, specifications, instructions, data, or materials not approved by the SI; (iii) the deliverables having been tampered with, altered or modified by OSRTC without the written permission of the SI, or (iv) use of the deliverables otherwise than in terms of the relevant documentation.

21. Liquidated damages

- Time is the essence of the Agreement, and the delivery dates are binding on the SI. In the event of delay or any gross negligence in implementation of the project before Go-Live, for causes solely attributable to the SI, in meeting the deliverables, OSRTC shall be entitled at its option to recover from the SI as agreed, liquidated damages, as defined in SLA for each completed week or part thereof subject to a limit of 10% of the total contract value.
- The Parties agree that SLA penalties defined in the Service Level Agreement are liquidated damages and that the deduction of any Service Credit by OSRTC shall be its exclusive monetary remedy for failure of SI to meet the Service Levels and is in full and final settlement of any claim which OSRTC may have for losses caused by the failure to meet a service level to which a service credit applies, provided that this Clause shall not limit the exercise by OSRTC of its rights to terminate the Agreement for Material Breach and the associated consequences of termination.

22. Escrow Agreement

- SI shall comply with the escrow provisions below for all bespoke development & customized codes as defined within the RFP (including subcontractor-owned materials and other Third-Party Material incorporated in SI's Proprietary Material), except to the extent SI demonstrates to the satisfaction of the OSRTC that compliance is not permitted by the nature of SI's limited rights in such material.
- Within ninety (90) days after OSRTC's acceptance of the solution, the parties shall enter into a software escrow agreement ("Escrow Agreement") with a reputable, independent, third party that provides software escrow services among its principal business offerings ("Escrow Agent"). The Escrow Agreement shall provide for the regular deposit into escrow of all source code (including

without limitation all make files, configurational files, data tables upon which execution is dependent, and the like, collectively the "Source Code"), object code, and documentation with respect to all Public Material and Implementation Agency's Proprietary Material (and cumulative updates thereof), together with (a) continually updated instructions as to the compilation, installation, configuration, deployment, and use of the Source Code, and (b) a list of all non-deposited third party software used in conjunction with the Source Code to provide the full functionality of the deposited materials. In the event of the termination or expiration of the initial Escrow Agreement or any successor agreement, with minimal delay the Parties shall enter into a substantially equivalent agreement with a successor provider of software escrow services (who shall then be known as the "Escrow Agent").

- SI will make its initial deposit of Source Code within fifteen (15) days after the effective date of the Escrow Agreement.
- SI shall periodically update the escrow deposit as the Parties shall agree in the Escrow Agreement. In addition to other usual and customary terms, the Escrow Agreement shall provide that OSRTC shall be entitled to obtain the deposited materials from escrow upon the OSRTC's making a proper claim for release from escrow in the event that (c) proper written notice is given to the Escrow Agent that release of the copy of the deposited materials is pursuant to applicable SI bankruptcy, insolvency, reorganization, or liquidation statute; (d) SI files articles of dissolution (but not if SI is consolidated or merged into another entity); (e) the Contract expires or terminates for Material Breach of SI.
- The release of deposited materials from escrow shall not confer upon OSRTC any right of ownership in the deposited materials or the underlying intellectual property embodied therein. In the event of the release of deposited materials to OSRTC from escrow, OSRTC shall use the deposited materials solely for the benefit of OSRTC and its constituents.
- The release of materials from escrow, without more, shall not cause any further amounts to accrue as payable to SI by OSRTC, and the term of the OSRTC's possessory and usage rights with respect to the released materials shall be perpetual.
- The Escrow Agreement shall provide for its automatic termination upon the earlier of five (5) years after the expiration or termination of this Contract, or release of all Source Code to OSRTC and the OSRTC's subsequent confirmation of compliance with the terms of the Escrow Agreement. SI shall pay the escrow costs, as well as all costs associated with causing its subcontractors and other third parties to abide by the Escrow Agreement.

23. Insurance Cover

23.1. Obligation to maintain insurance.

In connection with the provision of the Services, the SI must have and maintain -

- for the Agreement Period, valid and enforceable insurance coverage for
  - public liability
  - either professional indemnity or errors and omissions
  - product liability
  - theft, fire, and natural calamity
  - workers compensation as required by law.
  - any additional types specified in Schedule I

- For one year following the expiry or termination of the Agreement valid and enforceable insurance policies (if relevant) in the amount not less than the Insurance Cover specified in schedule I.

23.2. Certificates of currency

The SI must, on request by OSRTC, provide current relevant confirmation of insurance documentation from its insurance brokers certifying that it has insurance as required. The SI agrees to replace any coverage prior to the date of expiry/cancellation.

23.3. Non-compliance

OSRTC may, at its election, terminate this Agreement upon the failure of SI, or notification of such failure, to maintain the required insurance coverage. Inadequate insurance coverage for any reason shall not relieve SI of its obligations under this Agreement.

24. Miscellaneous

24.1. Personnel

- The personnel assigned by SI to perform the Services shall be employees of SI or its subcontractor(s), and under no circumstances shall such personnel be considered employees of OSRTC. The SI shall have the sole responsibility for the supervision and control of the personnel deployed in the Project and for payment of such personnel's compensation, including salary, withholding of income taxes and social security taxes, worker's compensation, employee, and disability benefits and the like and shall be responsible for all obligations of an employer subject to Applicable Law.
- The SI shall use its OSRTC efforts to ensure that sufficient SI personnel are assigned to perform the Services and those personnel have appropriate qualifications to perform the Services. After discussion with SI, OSRTC shall have the right to require the removal or replacement of any SI personnel performing work under this Agreement based on Bonafede reasons. If OSRTC requests that any SI personnel be replaced, the substitution of such personnel shall be accomplished pursuant to a mutually agreed upon schedule.
- If OSRTC and SI identify any personnel of SI as "Key Personnel", then the SI shall not remove such personnel from the Project without the prior written consent of OSRTC unless such removal is the result of an unavoidable circumstance including but not limited to resignation, termination, medical leave, etc.
- Except as stated in this Clause, nothing in this Agreement or the SLA will limit the ability of SI to freely assign or reassign its employees; provided that SI shall be responsible, at its expense, for transferring all appropriate knowledge from personnel being replaced to their replacements. OSRTC shall have the right to review and approve SI's plan for any such knowledge transfer. SI shall maintain the same or higher standards for skills and professionalism among replacement personnel as in personnel being replaced.
- Each Party shall be responsible for the performance of all its obligations under this Agreement or the SLA and shall be liable for the acts and omissions of its employees and agents in connection therewith.
- Neither Party will solicit for employment or knowingly hire an employee of the other Party with whom such Party has contact pursuant to project engagements under this Agreement. This restriction shall not apply to employees of either Party responding to advertisements in job fairs

or news media circulated to the public.

24.2. Independent Contractor

Nothing in this Agreement or the SLA shall be construed as establishing or implying any partnership or joint venture between the Parties to this Agreement or the SLA and, except as expressly stated in this Agreement or the SLA, nothing in this Agreement or the SLA shall be deemed to constitute any Parties as the agent of any other Party or authorizes either Party to:

- incur any expenses on behalf of the other Party.
- enter any engagement or make any representation or warranty on behalf of the other Party.
- pledge the credit of or otherwise bind or oblige the other Party.
- Commit the other Party in any way whatsoever without in each case obtaining the other Party's prior written consent.

24.3. Assignment

- All terms and provisions of this Agreement shall be binding on and shall inure to the benefit of OSRTC and their respective successors and permitted assigns.
- The SI shall not be permitted to assign its rights and obligations under this Agreement to any third party.
- OSRTC may assign or novate all or any part of this Agreement and Schedules/Annexures, and the SI shall be a party to such novation, to any third party contracted to provide outsourced services to OSRTC or any of its nominees.

24.4. Trademarks, Publicity

Neither Party may use the trademarks of the other Party without the prior written consent of the other Party except that SI may, upon completion, use the Project as a reference for credential purpose. Except as required by law or the rules and regulations of each stock exchange upon which the securities of one of the Parties is listed, neither Party shall publish or permit to be published either alone or in conjunction with any other person any press release, information, article, photograph, illustration or any other material of whatever kind relating to this Agreement, the SLA or the business of the Parties without prior reference to and approval in writing from the other Party, such approval not to be unreasonably withheld or delayed provided however that SI may include OSRTC or its client lists for reference to third parties subject to the prior written consent of OSRTC not to be unreasonably withheld or delayed. Such approval shall apply to each specific case and relate only to that case.

24.5. Notices

- Any notice or other document which may be given by either Party under this Agreement or under the SLA shall be given in writing in person or by pre-paid recorded delivery post, email or by facsimile transmission.
- In relation to a notice given under this agreement, any such notice or other document shall be addressed to the other Party's principal or registered office address as set out below:

Shri. _____

<< ADDRESS>>

Email:

With a copy to:

SITel:

Fax:

Email:

Contact:

- In relation to a notice given under the MSA / SLA, a Party shall specify the Parties' address for service of notices, any such notice to be copied to the Parties at the addresses set out in this Clause.
- Any such notice or other document shall be deemed to have been given to the other Party (or, if relevant, its relevant associated company) when delivered (if delivered in person) if delivered between the hours of 9.30 am and 6.00 pm at the address of the other Party set forth above or if sent by fax, provided the copy fax is accompanied by a confirmation of transmission, or on the next working day thereafter if delivered outside such hours, and 7 days from the date of posting (if by letter) or if sent by email.
- Either Party to this Agreement or to the SLA may change its address, telephone number, facsimile number and nominated contact for notification purposes by giving the other reasonable prior written notice of the new information and its effective date.

24.6. Severability and Waiver

- If any provision of this Agreement or the SLA, or any part thereof, shall be found by any court or administrative body of competent jurisdiction to be illegal, invalid, or unenforceable the illegality, invalidity or unenforceability of such provision or part provision shall not affect the other provisions of this Agreement or the SLA or the remainder of the provisions in question which shall remain in full force and effect. The relevant parties shall good faith to agree in any illegal, invalid or negotiate in substitute for unenforceable provision a valid and enforceable provision which achieves to the greatest extent possible the economic, legal, and commercial objectives of the illegal, invalid, or unenforceable provision or part provision.
- No failure to exercise or enforce and no delay in exercising or enforcing on the part of either Party to this Agreement or the SLA of any right, remedy or provision of this Agreement or the SLA shall operate as a waiver of such right, remedy or provision in any future application nor shall any single or partial exercise or enforcement of any right, remedy or provision preclude any other or further exercise or enforcement of such right, remedy or provision or the exercise or enforcement of any other right, remedy or provision.

24.7. Compliance with applicable law

Each Party to this Agreement accepts that its individual conduct shall (to the extent applicable to its business like the SI as an information technology service provider) at all times comply with all laws, rules and regulations of government and other bodies having jurisdiction over the area in which the Services are undertaken provided that changes in such laws, rules and regulations which result in a change to the Services shall be dealt with in accordance with the Change Control Schedule set out in Schedule II of this Agreement.

24.8. Professional Fees

All expenses incurred by or on behalf of each Party to this Agreement and the SLA, including all fees of agents, legal advisors, accountants, and actuaries employed by either of the Parties in connection with the negotiation, preparation and execution of this Agreement or the SLA shall be borne solely by the Party which incurred them.

24.9. Ethics

The SI represents, warrants, and covenants that it has given no commitments, payments, gifts, kickbacks, lavish or expensive entertainment, or other things of value to any employee or agent of OSRTC in connection with this agreement and acknowledges that the giving of any such payment, gifts, entertainment, or other things of value is strictly in violation of OSRTC standard policies and may result in cancellation of this Agreement, or the SLA.

24.10. Entire Agreement

This agreement and SLA with all schedules and annexures appended thereto and the contents and specifications of the RFP constitute the entire agreement between the parties with respect to their subject matter, and all the representations, understandings or agreements which are not fully expressed herein, if nothing in this clause shall be interpreted to exclude any liability in respect of fraud, misrepresentation, and corrupt practices.

24.11. Amendment

Any amendment to this Agreement shall be made in accordance with the Change Control Schedule set out in Schedule II of this Agreement by mutual written consent of all the Parties.

25. Governing law and dispute resolution

- This Agreement shall be governed by and construed in accordance with the laws of India, without giving effect to conflict of law rules. The parties expressly agree to exclude the application of the U.N. Convention on Contracts for the International Sale of Goods (1980) to this Agreement and the performance of the parties contemplated under this Agreement, to the extent that such convention might otherwise be applicable.
- Any dispute arising out of or in connection with this Agreement or the SLA shall in the first instance be dealt with in accordance with the escalation procedure as set out in the Schedule set out as Governance Schedule V of this Agreement.
- In case the escalations do not help in resolution of the problem within 3 weeks of escalation, both the parties should agree on a mediator for communication between the two parties. The process of the mediation would be as follows:
    - Aggrieved party should refer the dispute to the identified mediator in writing, with a copy to the other party. Such a reference should contain a description of the nature of the dispute, the quantum in dispute (if any) and the relief or remedy sought suitable.
    - The mediator shall use his OSRTC endeavors to conclude the mediation within a certain number of days of his appointment.
    - If no resolution can be reached through mutual discussion or mediation within 30 days, then the matter should be referred to Experts for advising on the issue.
- In case the mediation does not help in resolution, and it requires expertise to understand an issue, a neutral panel of 3 experts, agreeable to both parties should be constituted. The process of the expert advisory would be as follows:
    - Aggrieved party should write to other party on the failure of previous alternate dispute resolution processed within the timeframe and requesting for expert advisory. This is to be sent with a copy to the mediator.
    - Both parties should thereafter agree on the panel of experts who are well conversant with the issue under dispute
    - The expert panel shall use his best endeavors to provide a neutral position on the issue.
    - If no resolution can be reached through the above means within 30 days, then the matter should be referred to Arbitration.
- Any dispute or difference whatsoever arising between the parties to this Contract out of or relating to the construction, meaning, scope, operation or effect of this Contract or the validity of the breach thereof shall be referred to a sole Arbitrator to be appointed by mutual consent of both the parties herein. If the parties cannot agree on the appointment of the Arbitrator within a period of one month from the notification by one party to the other of existence of such dispute, then the Arbitrator shall be appointed by the High Court of New Delhi, India. The provisions of the Arbitration and Conciliation Act, 1996 will be applicable and the award made there under shall be final and binding upon the parties hereto, subject to legal remedies available under the law. Such differences shall be deemed to be a submission to arbitration under the Indian Arbitration and Conciliation Act, 1996, or of any modifications, Rules, or re-enactments thereof. The Arbitration proceedings will be held Delhi, India. Any legal dispute will come under the sole jurisdiction of New Delhi, India
- Compliance with laws: Each party will comply with all applicable export and import laws and

regulations.

- Risk of Loss: For each hardware item, SI bears the risk of loss or damage up to the time it is delivered to the SI / OSRTC -designated carrier for shipment to OSRTC or OSRTC's designated location.
- Third party components: SI will provide all third-party components solely on a pass- through basis in accordance with the relevant third-party terms and conditions.

IN WITNESS WHEREOF the Parties have by duly authorized Representatives set their respective hands and seal on the date first above Written in the presence of:

WITNESSES:

Signed by:

(Name and designation) For and on behalf of OSRTC

(FIRST PARTY)

Signed by:

(Name and designation)

SI (SECOND PARTY)

(Name and designation)

For and on behalf of SI

Signed by:

26. Schedule

26.1. Schedule – I: Definitions

Term	Definitions
"Bidder" or "SI" or"Lead Bidder"	Could be interchangeably used and it essentially Means the organization who is fully responsible towards TMC for providing turnkey solution for Supply, Installation, Implementation, Maintenance, and Operations of Software system, maintaining third party services and provide related services as per the requirements and terms and conditions specified in this tender / contract. The term SI shall be deemed to include the SI's successors, representatives (approved by the Purchaser), heirs, executors, administrators and permitted assigns unless excluded by the terms of the contract
Adverse Effect	Means material adverse effect on The ability of the SI to exercise any of its rights or perform/discharge any of its duties/obligations under and in accordance with the provisions of this Agreement and/or The legal validity, binding nature, or enforceability of this Agreement.
Agreement	Means this Master Services Agreement, Service Level Agreement and Non-Disclosure Agreement together with all Articles, Annexures, Schedules and the contents and specifications of the RFP; In the event of a conflict between this Agreement and the Schedules, the terms of the Agreement shall prevail.
Applicable Law(s)	Means any statute, law, ordinance, notification, rule, regulation, judgment, order, decree, byelaw, approval, directive, guideline, policy, requirement or other governmental restriction or any similar form of decision applicable to the relevant party and as may be in effect on the date of the execution of this Agreement and during the subsistence thereof, applicable to the Project.
Assets	Means any data, information, deliverable, solutions, services, products and materials tangible or intangible that are procured, produced, developed, installed, maintained, and serviced in due course of delivering the scope of Service provided by the Service Provider / System Integrator as per the requirements of the Volume I, II, III of this RFP
Bidder	Means the Organization(s) on whose behalf the tender response has been submitted.
Business Day	Means any day that is not a Sunday or a public holiday and starts at 9.30 AM.

Term	Definitions
Business Hours	Shall mean the working time for OSRTC users. For Web Server and other components which enable successful usage of web portals of OSRTC the working time should be considered as 24 hours for all the days of the week. It is desired that IT maintenance, other batch processes (like backup) etc. should be planned so that such backend activities have minimum effect on the performance.
Commercial Off-The- Shelf ('COTS')	refers to software products that are readymade and available for sale, lease, or license to the public
Confidential Information	Means all information including project Data (whether in written, oral, electronic or other format) which relates to the technical, financial and business affairs, dealers, suppliers, products, developments, operations, processes, data, trade secrets, design rights, know- how, plans, budgets and personnel of each Party and its affiliates which is disclosed to or otherwise learned by the other Party (whether a Party to this Agreement or to the SLA) in the course of or in connection with this Agreement (including without limitation such information received during negotiations, location visits and meetings in connection with this Agreement or the SLA);
Contract	Means the Tender and all Annexes thereto, the Agreement entered between the selected Bidder together with the Purchaser as recorded in the Contract form signed by the Purchaser and the Bidder including all Annexes thereto and the agreed terms as set out in the bid, all documents incorporated by reference therein and amendments and modifications to the above from time to time.
Contract Value	Means the price payable to the bidder under this Contract for the full and proper performance of its contractual obligations. The Contract Value shall be equal to the total Bid Price
Control	Means, in relation to any business entity, the power of a person to secure. by Means of the holding of shares or the possession of voting power in or in relation to that or any other business entity, or by virtue of any powers conferred by the articles of association or other document regulating that or any other business entity, that the affairs of the first mentioned business entity are conducted in accordance with that person's wishes and in relation to a partnership, Means the right to a share of more than one half of the assets, or of more than one half of the income, of the partnership.
Deliverables	Means the products, infrastructure and services agreed to be delivered by the SI in pursuance of the agreement as listed in volumes I, II and III of the RFP and defined more elaborately in the Volumes I and II of the RFP in relation to the Implementation and the Maintenance phases

Term	Definitions
	and includes all documents related to the user manual, technical manual, design, process and operating manuals, service mechanisms, policies and guidelines (such as security related, data migration related), inter alia payment and/or process related etc., source code and all its modifications.
Document	Means any embodiment of any text or image however recorded and includes any data, text, images, sound, voice, codes or and databases or microfilm or computer-generated microfiche
Effective Date	Means the date on which this Contract comes into force. This Contract shall come into force and effect on the date (the "Effective Date") of the Purchaser's notice to the SI instructing the SI to begin carrying out the activities.
Final Acceptance Test	Shall be conducted on completion of the following: Data Center operational, Deployment & operational hardware and networking at requisite locations, UAT of the overall integrated solution
Go-Live	Means commissioning and integration of all the hardware including Data Center, Disaster Recovery Center, the networks, the client-side computing devices and all the software applications, including the COTS product configured, customized, and used successfully by all the intended users of OSRTC for the scope of work as defined in the RFP
Intellectual Property Rights	Means and includes all rights in the Bespoke Software, its improvements, upgrades, enhancements, modified versions that may be made from time to time, database generated, compilations made, source code and object code of the software, the said rights including designs, copyrights, trademarks, patents, trade secrets, moral and other rights therein.
Intellectual Property Rights ('IPR')	Means any patent, copyright, trademark, trade name, service marks, brands, propriety information, Application Software whether arising before or after the execution of this Contract and the right to ownership and registration of these rights.
Material Breach	Means a breach by either Party (OSRTC or SI) of any of its obligations under this Agreement which has or is likely to have an Adverse Effect on the Project which such Party shall have failed to cure.
Original Equipment Manufacturer ('OEM')	Means the owner of the IPR or manufacturer of Goods for any equipment / system / software / product which is providing such goods to the Purchaser under the scope of this Tender / Contract.

Term	Definitions
Parties	Means OSRTC and SI for the purposes of this Agreement and "Party" shall be interpreted accordingly.
Performance Bank Guarantee	"Performance Guarantee" and "Performance Bank Guarantee" shall mean the guarantee provided by a Nationalized / Scheduled Bank to OSRTC on behalf of the SI for the amount specified in -as specified in respective Sections of the Volume I of the RFP
Planned Application Downtime	Means the unavailability of the application services due to maintenance activities such as configuration changes, upgradation, or changes to any supporting infrastructure wherein prior intimation (at least two working days in advance) of such planned outage shall be given and approval sought from OSRTC as applicable;
Project	Means entire scope of work as envisaged in the Volumes I, II and III of the RFP including Design, Development, Implementation, Operations, Management and Maintenance across all the locations as envisaged in the RFP and as per the terms and conditions laid down in the RFP and services in conformance to the SLA
Project Data	Means all proprietary data of the project generated out of project operations and transactions, documents and related information including but not restricted to user data which the SI obtains, possesses, or processes in the context of providing the Services to the users pursuant to this Agreement and the SLA.
Project Implementation	Means Project Implementation as per the testing standards and acceptance criteria prescribed by OSRTC or its nominated agencies.
Purchaser	Means OSRTC
Replacement SI	Means any third party that OSRTC or its nominated agencies appoint to replace SI upon expiry of the Term or termination of this Agreement or the SLA to undertake the Services or part thereof.
Required Consents	Means the consents, waivers, clearances, and licenses to use OSRTC"s Intellectual Property Rights, rights and other authorizations as may be required to be obtained for the software and other items that OSRTC or their nominated agencies are required to make available to SI pursuant to this Agreement.
Selected Bidder	Means the Organization(s) selected by Purchaser because of the tendering process described in this tender document
Service Level	Means the level of service and other performance criteria which will apply to the Services delivered by the Service provider as set out in the SLA

Term	Definitions
Services	Means the services delivered to the Stakeholders of OSRTC or its nominated agencies, employees of OSRTC or its nominated agencies, and to professionals or stakeholders as defined in Volumes I, II and II of the RFP, using the tangible and intangible assets created, procured, installed, managed and operated by the SI including the tools of information and communications technology and includes but is not limited to the list of services specified in Volume I and Volume II of the RFP
SLA	Means the Performance and Maintenance SLA executed by and between SI and OSRTC, in terms of the Service Level Requirements as per the model set out in this Agreement.
Software	Means the software designed, developed / customized, tested and deployed by the SI for the purposes of the rendering the Services to the Stakeholders of the Project and includes the source code (in case of Bespoke development) along with associated documentation, which is the work product of the development efforts involved in the Project and the improvements and enhancements effected during the term of the Project, but does not include the third party software products except for the customization components on such products (including the COTS products used for the product), proprietary software components and tools deployed by the SI and which, i.e., the bespoke software, shall be solely owned by the OSRTC.
Third Party Systems	Means systems (or any part thereof) in which the Intellectual Property Rights are not owned by OSRTC or SI and to which SI has been granted a license to use and which are used in the provision of Services.
System	Means all the components under the scope of this contract together as an integrated solution
Goods	Means all the equipment, sub-systems, hardware, software, products accessories and/or other material / items which the Bidder is required to supply, install and maintain under the contract.
Data	Means all information required for the system operations Or generated out of operations and transactions including but not restricted to user data which the Implementation Agency obtains, possesses or processes in the context of providing the Services to the users pursuant to this Agreement
Bespoke Software	Means is custom or tailor-made software developed for the Purchaser
Deliverables	Means the products, infrastructure and services agreed to be delivered by the Implementation Agency in pursuance of the agreement as defined more elaborately in the RFP, Implementation and the

Term	Definitions
	Maintenance phases and includes all documents related to the user manual, technical manual, design, process and operating manuals, service mechanisms, policies and guidelines (such as security related, data migration related), inter alia payment and/or process related etc., source code and all its modifications.
Software	Means the software designed, developed / customized, tested and deployed by the Implementation Agency for the purposes of the Project and includes the source code (in case of Bespoke development) along with associated documentation, which is the work product of the development efforts involved in the Project and the improvements and enhancements effected during the term of the Project, but does not include the third party software products (including the COTS products used for the product), proprietary software components and tools deployed by the Implementation Agency
Service	Means the services delivered to the Stakeholders of Purchaser or its nominated agencies, employees of Purchaser or its nominated agencies, and to professionals, using the tangible and intangible assets created, procured, installed, managed, and operated by the Implementation Agency including the tools of information and communications technology.

26.2. Schedule – II: Change control schedule.

- This Schedule describes the procedure to be followed in the event of any proposed change to the Master Service Agreement (“MSA”), Project Implementation Phase, SLA and Scope of Work and Functional Requirement Specifications. Such change shall include, but shall not be limited to, changes in the scope of services provided by the SI and changes to the terms of payment as stated in the Terms of Payment Schedule.
- OSRTC and SI recognize that frequent change is an inevitable part of delivering services and that a significant element of this change can be accomplished by re-organizing processes and responsibilities without a material effect on the cost. The SI will endeavor, wherever reasonably practicable, to effect change without an increase in the terms of payment as stated in the Terms of Payment Schedule and OSRTC will work with the SI to ensure that all changes are discussed and managed in a constructive manner. This Change Control Schedule sets out the provisions which will apply to all the changes to this agreement and other documents except for the changes in SLAs for which a separate process has been laid out in the SLA Agreement.

Change control note ("CCN")

- Change requests in respect of the MSA, the Project Implementation, the operation, the SLA, or Scope of work and Functional Requirement specifications will emanate from the Parties' respective Project Manager who will be responsible for obtaining approval for the change and who will act as its sponsor throughout the Change Control Process and will complete Part A of the CCN attached as Annexure A hereto. CCNs will be presented to the other Party's Project Manager who will acknowledge receipt by signature of the CCN.

- The SI and OSRTC, during the Project Implementation Phase and OSRTC during the Operations and Management Phase and while preparing the CCN, shall consider the change in the context of the following parameter, namely whether the change is beyond the scope of Services including ancillary and concomitant services required and as detailed in the RFP and is suggested and applicable only after the testing, commissioning and certification of the Pilot Phase and the Project Implementation Phase as set out in this Agreement.
- It is hereby also clarified here that any change of control suggested beyond 15% of the value of this Project will be beyond the scope of the change control process and will be considered as the subject matter for a separate bid process and a separate contract. It is hereby clarified that the 15% of the value of the Project as stated in herein above is calculated based on bid value submitted by the SI and accepted by OSRTC or its nominated agencies or as decided and approved by OSRTC or its Nominated Agencies. For arriving at the cost / rate for change up to 15% of the project value, the payment terms and relevant rates as specified in Annexure D shall apply.
- The SLAs defined in this contract are subject to modifications/amendments in view of the annual review or to meet any other project requirements. Any such change in SLA will not be considered as a change request.

Quotation

- The SI shall assess the CCN and complete Part B of the CCN, in completing the Part B of the CCN the SI shall provide as a minimum:
  - a description of the change.
  - a list of deliverables required for implementing the change.
  - a timetable for implementation.
  - an estimate of any proposed change.
  - material evidence to prove that the proposed change is not already covered with in the agreement and the scope of work.
- Prior to submission of the completed CCN to OSRTC, the SI will undertake its own internal review of the proposal and obtain all necessary i ternal approvals. As a part of this internal review process, the SI shall consider the materiality of the proposed change in the context of the MSA, and the Project Implementation affected by the change and the total effect that may arise from implementation of the change.

Costs

Each Party shall be responsible for its own costs incurred in the quotation, preparation of CCNs and in the completion of its obligations described in this process provided the SI meets the obligations as set in the CCN. In the event the SI is unable to meet the obligations as defined in the CCN then the cost of getting it done by third party will be borne by the SI.

Obligations

The SI shall be obliged to implement any proposed changes once approval in accordance with above provisions has been given, with effect from the date agreed for implementation and within an agreed timeframe. SI will not be obligated to work on a change until the parties agree in writing upon its scope, price and/or schedule impact.

26.3. Schedule – III: Exit management schedule.

Purpose

- This Schedule sets out the provisions, which will apply on expiry or termination of the MSA, the Project Implementation, Operation and Management SLA.
- In the case of termination of the Project Implementation and/or Operation and Management, the Parties shall agree at that time whether, and if so during what period, the provisions of this Schedule shall apply.
- The Parties shall ensure that their respective associated entities carry out their respective obligations set out in this Exit Management Schedule.

Transfer of assets

- OSRTC shall be entitled to serve notice in writing on the SI at any time during the exit management period as detailed hereinabove requiring the SI and/or its subcontractors to provide OSRTC with a complete and up to date list of the Assets within 30 days of such notice. OSRTC shall then be entitled to serve notice in writing on the SI at any time prior to the date that is 30 days prior to the end of the exit management period requiring the SI to sell the assets, if any, to be transferred to OSRTC or its nominated agencies at book value as determined as of the date of such notice in accordance with the provisions of relevant laws.
- In case of contract being terminated by OSRTC, OSRTC reserves the right to ask SI to continue running the project operations for a period of 6 months after termination orders are issued.
- Upon service of a notice under this Article the following provisions shall apply:
    - In the event, if the Assets to be transferred are mortgaged to any financial institutions by the SI, the SI shall ensure that all such liens and liabilities have been cleared beyond doubt, prior to such transfer. All documents regarding the discharge of such lien and liabilities shall be furnished to OSRTC.
    - All risk in and title to the Assets to be transferred / to be purchased by OSRTC pursuant to this Article shall be transferred to OSRTC, at Go-Live.
    - SI shall be paid the depreciated book value of the infrastructure cost and other assets. The depreciation rates and method followed will be as per Income Tax Rules.
    - Payment to the outgoing SI shall be made to the tune of last set of completed services / deliverables, subject to SLA requirements.
    - The outgoing SI will pass on to OSRTC and/or to the Replacement SI, the subsisting rights in any leased properties/ licensed products on terms not less favorable to OSRTC/ Replacement SI, than that enjoyed by the outgoing SI.

Cooperation and provision of information

- During the exit management period:
    - The SI will allow OSRTC or its nominated agency access to information reasonably required to define the then current mode of operation associated with the provision of the services to enable OSRTC to assess the existing services being delivered.
    - Promptly on reasonable request by OSRTC, the SI shall provide access to and copies of all information held or controlled by them which they have prepared or maintained in accordance

with this agreement relating to any material aspect of the services (whether provided by the SI or sub-contractors appointed by the SI). OSRTC shall be entitled to copy of all such information. Such information shall include details pertaining to the services rendered and other performance data. The SI shall permit OSRTC to have reasonable access to its employees and facilities as reasonably required by the Chairman, Project Implementation Unit (PIU) to understand the methods of delivery of the services employed by the SI and to assist appropriate knowledge transfer.

Confidential information, security, and data

- The SI will promptly on the commencement of the exit management period supply to OSRTC or its nominated agency the following:
  - information relating to the current services rendered and customer and performance data relating to the performance of bidder in relation to the services.
  - documentation relating to Project's Intellectual Property Rights.
  - documentation relating to sub-contractors.
  - all current and updated data as is reasonably required for purposes of OSRTC transitioning the services to its Replacement SI in a readily available format nominated by OSRTC, its nominated agency.
  - all other information (including but not limited to documents, records, and agreements) relating to the services reasonably necessary to enable OSRTC, or its Replacement SI to carry out due diligence in order to transition the provision of the Services to OSRTC, or its Replacement SI (as the case may be).
- Before the expiry of the exit management period, the SI shall deliver to OSRTC or its nominated agency all new or up-dated materials from the categories set out in Schedule above and shall not retain any copies thereof, except that the SI shall be permitted to retain one copy of such materials for archival purposes only.
- Before the expiry of the exit management period, unless otherwise provided under the MSA, OSRTC or its nominated agency shall deliver to the SI all forms of SI confidential information, which is in the possession or control of OSRTC or its users.

Employees

- Promptly on reasonable request at any time during the exit management period, the SI shall, subject to applicable laws, restraints and regulations (including in particular those relating to privacy) provide to OSRTC or its nominated agency a list of all employees (with job titles) of the SI dedicated to providing the services at the commencement of the exit management period.
- Where any national, regional law or regulation relating to the mandatory or automatic transfer of the contracts of employment from the SI to OSRTC or its nominated agency, or a replacement SI ("Transfer Regulation") applies to any or all of the employees of the SI, then the Parties shall comply with their respective obligations under such Transfer Regulations.

Transfer of certain agreements

On request by OSRTC or its nominated agency the SI shall effect such assignments, transfers, licenses and sub-licenses as the Chairperson, PIU may require in favour of the Chairperson, PIU, or its Replacement SI in relation to any equipment lease, maintenance or service provision agreement between SI and third party lessors, vendors, and which are related to the services and

reasonably necessary for the carrying out of replacement services by OSRTC or its nominated agency or its Replacement SI.

Rights of access to premises

- At any time during the exit management period, where Assets are located at the SI's premises, the SI will be obliged to give reasonable rights of access to (or, in the case of Assets located on a third party's premises, procure reasonable rights of access to) OSRTC or its nominated agency and/or any Replacement SI to make an inventory of the Assets.
- The SI shall also give OSRTC or its nominated agency, or any Replacement SI right of reasonable access to the Implementation Partner's premises and shall procure OSRTC or its nominated agency and any Replacement SI rights of access to relevant third party premises during the exit management period and for such period of time following termination or expiry of the MSA as is reasonably necessary to migrate the services to OSRTC or its nominated agency, or a Replacement SI.

General obligations of the service provider

- The SI shall provide all such information as may reasonably be necessary to effect as seamless a handover as practicable in the circumstances to OSRTC or its nominated agency or its Replacement SI and which the SI has in its possession or control at any time during the exit management period.
- For the purposes of this Schedule, anything in the possession or control of any SI, associated entity, or sub-contractor is deemed to be in the possession or control of the SI.
- The SI shall commit adequate resources to comply with its obligations under this Exit Management Schedule.

Exit management plan.

- The SI shall provide OSRTC or its nominated agency with a recommended exit management plan ("Exit Management Plan") which shall deal with at least the following aspects of exit management in relation to the MSA as a whole and in relation to the Project Implementation, and the Operation and Management SLA.
    - A detailed program of the transfer process that could be used in conjunction with a Replacement SI including details of the means to be used to ensure continuing provision of the services throughout the transfer process or until the cessation of the services and of the management structure to be used during the transfer.
    - plans for the communication with such of the SI's sub-contractors, staff, suppliers, customers and any related third party as are necessary to avoid any material detrimental impact on OSRTC’s operations because of undertaking the transfer.
    - (If applicable) proposed arrangements for the segregation of the SI's networks from the networks employed by OSRTC and identification of specific security tasks necessary at termination.
    - Plans for provision of OEM support for the hardware and software components and any other contingent support for a period of 9 months after the expiry or termination of the contract period.
- The SI shall re-draft the Exit Management Plan annually thereafter to ensure that it is kept relevant and up to date.

- Each Exit Management Plan shall be presented by the SI to and approved by OSRTC.
- The terms of payment as stated in the Terms of Payment Schedule include the costs of the SI complying with its obligations under this Schedule.
- In the event of termination or expiry of MSA, and Project Implementation, each Pa ty shall comply with the Exit Management Plan.
- During the exit management period, the SI shall use its best efforts to deliver the services.
- Payments during the Exit Management period shall be made in accordance with the Terms of Payment Schedule.
- This Exit Management plan shall be furnished in writing to OSRTC within 90 days from the Effective Date of this Agreement.

26.4. Schedule – IV: Audit, Access, and Reporting

Purpose

This Schedule details the audit, access and reporting rights and obligations of OSRTC or its nominated agency and the SI.

Audit notice and timing

- As soon as reasonably practicable after the Effective Date, the Parties shall use their OSRTC endeavors to agree to a timetable for routine audits during the Project Implementation Phase and the Operation and Management Phase. Such timetable during the Implementation Phase, OSRTC or its nominated agency and thereafter during the operation Phase, OSRTC or its nominated agency shall conduct routine audits in accordance with such agreed timetable and shall not be required to give the SI any further notice of carrying out such audits.
- OSRTC or its nominated agency may conduct non-timetabled audits at his/ her own discretion if it reasonably believes that such non-timetabled audits are necessary as a result of an act of fraud by the SI, a security violation, or breach of confidentiality obligations by the SI, provided that the requirement for such an audit is notified in writing to the SI a reasonable period time prior to the audit (taking into account the circumstances giving rise to the reasonable belief) stating in a reasonable level of detail the reasons for the requirement and the alleged facts on which the requirement is based. If the SI considers that the non-timetabled audit was not appropriate, the matter shall be referred to the escalation procedure as set out in the Governance Schedule.
- The frequency of audits shall be a (maximum) half yearly, provided always that OSRTC or its nominated agency shall endeavor to conduct such audits with the lowest levels of inconvenience and disturbance practicable being caused to the SI. Any such audit shall be conducted by with adequate notice of 2 weeks to the SI.
- OSRTC will ensure that any 3rd party agencies (except CAG) appointed to conduct the audit will not be the competitor of SI and will be bound by confidentiality obligations.

Access

The SI shall provide to OSRTC or its nominated agency reasonable access to employees, subcontractors, suppliers, agents, and third-party facilities as detailed in the RFP, documents, records, and systems reasonably required for audit and shall provide all such persons with routine assistance in connection with the audits and inspections. The Chairperson, PIU / Steering

Committee shall have the right to copy and retain copies of any relevant records. The SI shall make every reasonable effort to co- operate with them.

Audit rights

OSRTC or its nominated agency shall have the right to audit and inspect suppliers, agents, and third-party facilities (as detailed in the RFP), data centres, documents, records, procedures, and systems relating to the provision of the services, but only to the extent that they relate to the provision of the services, as shall be reasonably necessary to verify:

- The security, integrity and availability of all data processed, held, or conveyed by the Partner on behalf of OSRTC and documentation related thereto.
- That the actual level of performance of the services is the same as specified in the SLA.
- That the SI has complied with the relevant technical standards and has adequate internal controls in place.
- The compliance of the SI with any other obligation under the MSA and SLA.
- Security audit and implementation audit of the system shall be done once each year, the cost of which shall be borne by the SI.
- For the avoidance of doubt the audit rights under this Schedule shall not include access to the SI's profit margins overheads, any confidential information relating to the SI's employees, or minutes of its internal Board or Board committee meetings including internal audit, or such other information of commercial-in-confidence nature which are not relevant to the Services associated with any obligation under the MSA.

Audit rights of sub-contractors, suppliers, and agents

- The SI shall use reasonable endeavors to achieve the same audit and access provisions as defined in this Sch dule with sub-contractors, suppliers and agents who supply labor, services, equipment, or materials in respect of the services. The SI shall inform OSRTC or its nominated agency prior to concluding any sub-contract or supply agreement of any failure to achieve the same rights of audit or access.
- REPORTING: The SI will provide quarterly reports to the Chairperson, PIU / Steering committee regarding any specific aspects of the Project and in context of the audit and access information as required by OSRTC or its nominated agency.

Action and review

- Any change or amendment to the systems and procedures of the SI, or sub- contractors, where applicable arising from the audit report shall be agreed within thirty (30) calendar days from the submission of the said report.
- Any discrepancies identified by any audit pursuant to this Schedule shall be immediately notified to OSRTC or its nominated agency and the SI Project Manager who shall determine what action should be taken in respect of such discrepancies in accordance with the terms of the MSA.

Terms of payment

The SI shall bear the cost of any audits and inspections as per the scope of work defined in Volume –II of the RFP. The terms of payment are exclusive of any costs of the SI and the sub-contractor, for all reasonable assistance and information provided under the MSA, the Project Implementation, Operation and Management SLA by the SI pursuant to this Schedule.

Records and information

For the purposes of audit in accordance with this Schedule, the SI shall maintain true and accurate records in connection with the provision of the services and the SI shall handover all the relevant records and documents upon the termination or expiry of the MSA.

26.5. Schedule – V: Governance schedule

Purpose

The purpose of this Schedule is to:

- Establish and maintain the formal and informal processes for managing the relationship between OSRTC and the SI including the outputs from other Schedules to this Agreement.
- Define the principles that both Parties wish to follow to ensure the delivery of the Services.
- Ensure the continued alignment of the interests of the Parties.
- Ensure that the relationship is maintained at the correct level within each Party.
- Create the flexibility to revise and maintain the relationship and this Agreement during the Term.
- Set out the procedure for escalating disagreements; and
- Enable contract administration and performance management.

Governance structure

- Project Managers: The relationship under this Agreement will be managed by the Project Managers appointed by each party, who will provide the interface between the agreement of the executive management of respective parties.
- Project Implementation Unit (PIU): Within 7 days following the Effective Date, OSRTC, Project Consultant and the SI shall each appoint a Project Manager. If either Party wishes to substitute its Project Manager, it will do so in way the original appointment is made and notify the other Party of such substitution as soon as reasonably practicable but at the latest within 7 days of the substitution.
- The Project Managers shall have responsibility for maintaining the interface and communication between the Parties.
- The PIU will meet formally on a fortnightly / monthly / quarterly, as required, basis at a time and location to be agreed between them. These meetings will cover, as a minimum, the following agenda items: (i) consideration of Quarterly Performance Reports; (ii) consideration of matters arising out of the Change Control Schedule; (iii) issues escalated in accordance with the escalation procedure as set out in the Governance Schedule; (iv) matters to be brought before the PIU in accordance with the MSA and the Schedules; (v) any matter brought before the PIU by the SI under this Article; and (vi) any other issue which either Party wishes to add to the agenda.
- If there is any material factor which affects the delivery of the Services or the terms of payment as stated in the Terms of Payment Schedule, the Parties agree to discuss in the PIU any appropriate amendment to the Agreement or any Service Level Agreements or Statement of Works including any variation to the terms of payment as stated in the Terms of Payment Schedule. Any variation so agreed shall be implemented through the change control procedure as set out in the Change Control Schedule.

Governance procedures

- The SI shall document the agreed structures in a procedure's manual.
- The agenda for each meeting of the PIU shall be set to reflect the discussion items referred to above and extraordinary items may be added either with the agreement of the Parties or at the request of either Party. Copies of the agenda for meetings of the PIU, along with relevant pre-reading material, shall be distributed at least one week in advance of the relevant meeting.
- All meetings and proceedings will be documented such documents to be distributed to the Parties and copies shall be kept as a record. All actions, responsibilities and accountabilities arising out of any meeting shall be tracked and managed.
- The Parties shall ensure as far as reasonably practicable that the PIU shall resolve the issues and resolve the objectives placed before them and that members representing that Party are empowered to make relevant decisions or have easy access to empowered individuals for decisions to be made to achieve this.
- In order formally to submit a Disputed Matter to the aforesaid for one Party ("Claimant") shall give a written notice ("Dispute Notice") to the other Party. The Dispute Notice shall be accompanied by (a) a statement by the Claimant describing the Disputed Matter in reasonable detail and (b) documentation, if any, supporting the Claimant's position on the Disputed Matter.
- The other Party ("Respondent") shall have the right to respond to the Dispute Notice within 7 days after receipt of the Dispute Notice. If the parties are unable to resolve the Disputed Matter within a further period of 7 days, it shall refer the Disputed Matter to next level of the dispute resolution for action as per the process mentioned in this document.
- All negotiations, statements and / or documentation pursuant to these Articles shall be without prejudice and confidential (unless mutually agreed otherwise).
- If the Disputed Matter is having a material effect on the operation of the Services (or any of them or part of them) the Parties will use all their respective reasonable endeavors to reduce the elapsed time in reaching a resolution of the Disputed Matter.

26.6. Schedule – VI - Terms of Payment Schedule

As per the payment terms defined in the RFP.