Capital Region
Urban Transport

RFP for selection of Integrated Transport Management System (ITMS) partner
For
Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha

Tender No.: 761/CRUT/2021 **Date: 04/06/2021**

CAPITAL REGION URBAN TRANSPORT

Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar, Bhubaneswar, Odisha - 751007

Disclaimer

1. Capital Region Urban Transport (herein after referred to as CRUT) has issued this for *Request For Proposal RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha* on such Terms and Conditions as set out in this RFP document, including but not limited to the Technical Specifications set out in different parts of this RFP document.

2. This RFP has been prepared with an intention to invite prospective Applicants/Bidders and to assist them in making their decision of whether or not to submit a proposal. It is hereby clarified that this RFP is not an agreement and the purpose of this RFP is to provide the Bidder(s) with information to assist them in the formulation of their proposals. This RFP document does not purport to contain all the information Bidders may require. This RFP document may not be appropriate for all persons, and it is not possible for CRUT to consider the investment objectives, financial situation and particular needs of each Bidder.
3. CRUT has taken due care in preparation of information contained herein. However, this information is not intended to be exhaustive. Interested parties are required to make their own inquiries and respondents will be required to confirm in writing that they have done so and they do not solely rely on the information contained in this RFP in submitting their Proposal. This RFP includes statements, which reflect various assumptions and assessments arrived at by CRUT in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require.
4. This RFP is not an agreement by and between CRUT and the prospective Bidders or any other person. The information contained in this RFP is provided on the basis that it is non– binding on CRUT, any of its authorities or agencies, or any of their respective officers, employees, agents, or advisors. CRUT makes no representation or warranty and shall incur no liability under any law as to the accuracy, reliability or completeness of the information contained in the RFP document. Each Bidder is advised to consider the RFP document as per his understanding and capacity. The Bidders are also advised to do appropriate examination, enquiry and scrutiny of all aspects mentioned in the RFP document before bidding. Bidders are encouraged to take professional help of experts on financial, legal, technical, taxation, and any other matters / sectors appearing in the document or specified work. Bidders are also requested to go through the RFP document in detail and bring to notice of CRUT any kind of error, misprint, inaccuracies, or omission in the document. CRUT reserves the right not to proceed with the project, to alter the time table reflected in this document, or to change the process or procedure to be applied. CRUT also reserves the right to decline to discuss the Project further with any party submitting a proposal.
5. No reimbursement of cost of any type will be paid to persons/entities, submitting a Proposal. The Bidder shall bear all costs arising from, 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 CRUT or any other costs incurred in connection with or relating to its Bid.

6. This issue of this RFP does not imply that CRUT is bound to select and pre-qualify Bids for Bid Stage or to appoint the selected Bidder for the project and CRUT reserves the right to reject all or any of the Bids without assigning any reasons whatsoever.
7. CRUT 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 RFP.
8. CRUT, its employees and advisors make no representation or warranty and shall have no liability (for any cost, damage, loss or expense which may arise from or is incurred or suffered on account of anything contained in this RFP or otherwise, including but not limited to the accuracy, adequacy, correctness, completeness or reliability of the RFP and any assessment, assumption, statement or information contained therein or deemed to be part of this RFP or arising in any way with eligibility of Bidder for participation in the Bidding Process) towards any Applicant or Bidder or a third person, under any law, statute, rule, regulation or tort law, principles of restitution or unjust enrichment or otherwise.
9. CRUT also accepts no liability of any nature whether resulting from negligence or otherwise howsoever caused arising from reliance of any Bidder upon the statement contained in this RFP.
10. Interested parties, after careful review of all the clauses of this 'Request for Proposal', are encouraged to send their suggestions in writing to CRUT. Such suggestions, after review by CRUT, may be incorporated into this 'Request for Proposal' as a corrigendum which shall be uploaded onto website www.capitalregiontransport.in

Abbreviations

CRUT	Capital Region Urban Transport
AVLS	Automatic Vehicle Location System
AFCS	Automatic Fare Collection System
CSP	Cloud OAA
DC	Data Centre
EMD	Earnest Money Deposit
ETM	Electronic Ticketing Machine
ISO	International Organization for Standardization
LOI	Letter of Intent
MIS	Management Information System
CRUT	Capital Region Urban Transport
MSA	Master Services Agreement
PBG	Performance Bank Guarantee
RFP	Request for Proposal
SLA	Service Level Agreement
TCV	Total Contract Value
TDS	Tax Deducted at Source
UAT	User Acceptance Testing
GST	Goods & Service Tax
CPS	Common payment systems
ETA	Estimated Time of Arrival
ETM	Electronic Ticketing Machine

Key Terms – Definition

Term	Definition
Acceptance	Acceptance of the proposed solution by CRUT after clearance by the 'Third Party Assessment and Acceptance Agency' deployed by CRUT.
Assets	All Assets used in providing Services in accordance with this MSA and shall include: IT and Non-IT Infrastructure including Hardware. Software, System software required for delivery of Services under the Project All data, documentation, reports, records etc. created during the course of the Project for the purpose of the Project
Auditor	Auditor shall mean the Statutory Auditor of a company
Bid/ Proposal	This means the documents in their entirety comprising of the pre- qualification Proposal, Technical and Commercial Proposal, clarifications to these, technical presentation/ demo submitted by the Bidder, the Bidder herein, in response to the RFP, and accepted by CRUT.
Bidder	Means the company with whom the Contract has been entered into for providing services as specified in this RFP, representatives (approved by CRUT), their executors, and administrators and permitted assigns, as the case may be, unless excluded by the terms of the Contract. The terms Bidder has been interchangeably used in the RFP document
Bidder's Representative	The person or the persons appointed by the Bidder from time to time to act on its behalf for overall co-ordination, supervision and execution of Project
Business Day	This means any day that is not a Sunday or a public holiday (as declared by Government of Odisha).
Cloud / Cloud Services	This means a ubiquitous, virtualized, dynamically scalable, pay-per-use shared computing environment of application, platform and infrastructure (servers, storage, processing) used to store, manage and process data over the internet. Cloud Services shall implicitly mean Data Center hosted on a highly secure Public Cloud environment in India.
Contract / Project Period	The time period from date of signing of Contract with selected Bidder till 5 Years after Go-live of the Project or as further extended by CRUT.
Day	A period of 24 hours running from midnight to midnight. It means "calendar day" unless otherwise stated. Where, because of a difference in time zone, the calendar day in one country differs from another country then the calendar day shall be deemed to be the calendar day applicable to India.
Deliverables	The documents, milestones and activities related to the setting up and implementation of Project in CRUT, as defined in the RFP.
EMD / Bid Security	This refers to the amount to be deposited by the Bidders to CRUT to demonstrate commitment and intention to complete the process of RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS

Term	Definition
	for public transport services managed by CRUT, Bhubaneswar, Odisha.
End of Contract	This refers to the time when the Contract Period has ended.
External Users	This refers to users of the System who are external to CRUT such as Citizens, businesses, agencies
Go-live	The date as declared by CRUT on which the proposed solution becomes operational after successful conclusion of all acceptance tests to the satisfaction of CRUT or as provided in this RFP with addition of timely requirements such as modifications or additions in reports or ETM process etc. Planned date of Go-live is 6 months from the date of signing of Contract
Government Services	Services that are offered by CRUT or any of their agencies/undertakings, through any of the service delivery channels as outlined
Internal Users	This refers to users of the System who are internal to CRUT including its offices, and agencies and their employees etc.
Letter of Intent	This refers to the letter issued by CRUT to the successful Bidder indicating its selection as the Bidder for implementation of the Project
Deployed bus	Any bus in which the Bidder has deployed ETM at any time during the tenure of the contract. A bus is considered as a deployed bus if ETM is deployed in it irrespective of the number of days it has run in any month during the tenure of the contract. Once deployed, the bus is considered as a 'Deployed bus' for the remaining tenure of the contract
RFP/Tender	This means the Request for Proposal released, containing the technical, functional, commercial and operational specification for the for selection of ITMS partner for design, development, integration, implementation and operation of E-ticketing system and vehicle tracking system for the transit vehicles owned by CRUT, and including all clarifications/addendums, explanations and amendments issued by CRUT in respect thereof
Sign-off	A written documentation issued by CRUT evidencing the acceptance, approval or completion, as the case may be, of any Deliverable including any documentation or testing or any stage of the Project such as Go-Live, that may be required in terms of the Contract
Rollout	The day when the Bidder completes the rollout of the new system at all locations and across the locations as per requirements of the RFP and is ready for acceptance testing by CRUT.
System Integration	Process through which the engaged business entity (firm/company) will design and build computing systems customized to the needs of CRUT along with timely requirements of minor integration (with SMS facility provider, scan and pay service provider that may arise in future by combining communication infrastructure, hardware and software products from one or more vendors. The software products may be new or existing systems and may be built afresh from scratch or packaged products as per the requirements of CRUT defined in the Scope of Work.

Term	Definition
Service Provider	Existing or future IT vendors or partners of CRUT's, those are providing entire or any or sub part of ITMS solutions (e-payment vendors such as scan and pay, or AVLS or AFCS provider etc.) excluding bidder if selected.
Total Contract Value/ Contract Value	Value (exclusive of all taxes, levies and duties) finally agreed between CRUT and the Bidder for the delivery of Services mentioned in the RFP (after negotiations with the selected Bidder). All relevant taxes would be considered for reimbursement on actuals as per CRUT's discretion and prevailing Government Laws. This will be the maximum value payable to the Bidder for this Project.
Turnover	The total amount of gross receipts, on account of sales done by the entity in the normal course of business, as per the annual report and as adjusted with any qualifications in the auditors' report
Users	This means the internal and external users of the System including citizens, business firms, CRUT including its offices, corporations and agencies and their employees, as the context admits or requires

DISCLAIMER **1**

ABBREVIATIONS **3**

KEY TERMS – DEFINITION **4**

1. INVITATION FOR PROPOSAL **11**

TENDER NOTICE **12**

KEY EVENTS AND DATES: 13
OTHER IMPORTANT INFORMATION RELATED TO BID 14

2. INSTRUCTIONS TO BIDDERS **15**

BACKGROUND 15
PURPOSE 15
COST OF RFP 16
CHANGE IN OWNERSHIP 16
TRANSFER OF RFP 16
CONSORTIUM 16
SUB-CONTRACTING CONDITIONS 16
COMPLETENESS OF RESPONSE 16
PROPOSAL PREPARATION COSTS 17
RIGHT TO VARY THE SCOPE OF THE WORK 17
BIDDER INQUIRIES 17
AMENDMENT OF RFP DOCUMENT 17
SUPPLEMENTARY INFORMATION TO THE RFP 17
CRUT'S RIGHT TO TERMINATE THE PROCESS 17
CRUT'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS 18
EARNEST MONEY DEPOSIT (EMD) 18
LANGUAGE OF BIDS 18
PATENT CLAIM 18
INTELLECTUAL PROPERTY RIGHTS 19
CONTACT DETAILS 19
PRE-BID QUERIES ON RFP 19
NUMBER OF BIDS 19
VERIFICATION OF INFORMATION 19
BID SUBMISSION FORMAT 20
MODE OF SUBMISSION OF THE BID 20
BID SUBMISSION INSTRUCTIONS 20
DISQUALIFICATION 21
LATE PROPOSAL AND PROPOSAL VALIDITY PERIOD 22
MODIFICATION AND WITHDRAWAL OF PROPOSALS 22
NON-CONFORMING PROPOSALS 22
ACKNOWLEDGEMENT OF UNDERSTANDING OF TERMS 22

3. BID EVALUATION METHODOLOGY **24**

OVERALL METHODOLOGY 24
BID OPENING 24
BID EVALUATION COMMITTEE 24
PROCESS OF EVALUATION 24
Qualification Criteria *25*
Evaluation of Technical Proposal *27*
Financial Bid Evaluation *31*
Commercial Evaluation & Award Criteria *31*
AWARD OF CONTRACT 31
SECURITY DEPOSIT 32

BID PRICES 32
BID CURRENCY 32
SIGNATURE 32
CORRECTION OF ERRORS 32
CORRECTIONS TO ARITHMETIC ERRORS 32
FRAUD AND CORRUPT PRACTICES 32
SUPPLEMENTARY INFORMATION/CORRIGENDUM/AMENDMENT TO THE RFP 34
MISCELLANEOUS 34

4. SCOPE OF WORK 35

ABOUT THE PROJECT 35
OVERVIEW OF SCOPE OF WORK 36
PROJECT COVERAGE 38
INTELLIGENT TRANSPORT MANAGEMENT SYSTEM (ITMS) 40
Overview 40
Solution Summary 40
System Requirements 41
TECHNICAL ARCHITECTURE AND REQUIREMENT ITMS SOLUTION FEATURES 44

5. PROPOSED SOLUTION 45

PROPOSED FEATURES OF ITMS SOLUTION THE PROPOSED FEATURES OF ITMS SOLUTION FOR CRUT ARE LISTED BELOW: 45
AUTOMATIC VEHICLE LOCATING SYSTEM 47
AUTOMATIC FARE COLLECTION SYSTEM 49
PASSENGER INFORMATION SYSTEM 54
DEPOT MANAGEMENT SYSTEM/SOLUTION 55
DEPOT SURVEILLANCE SYSTEM 62
CAMERA BASED IN BUS SURVEILLANCE SYSTEM 62
CLOUD BASED DC & DR 62
ICT INFRASTRUCTURE AND CCC 65
INCIDENT MANAGEMENT SYSTEM 65
WEB PORTAL 67
MOBILE APPLICATION 67
MIS 68
FINANCIAL MANAGEMENT SYSTEM 69
BUSINESS INTELLIGENCE PLATFORM 70

6. PROJECT DELIVERABLES 75

PROJECT TIMELINES 75
DATA CONVERSION, CLEANING AND MIGRATION 76
INTEGRATION WITH EXISTING ITMS 76
TESTING OF ITMS SOLUTION 77
QUALITY REVIEW AND SECURITY AUDIT 77
PROJECT AND PRODUCT DOCUMENTATION 78
CLOUD HOSTING AND INTEGRATION 78
Hosting at data Center and Disaster Recovery Centre of Secured Public Cloud 79
Provision of Security Infrastructure 79
Provision of SLA Monitoring Tool including help desk software 80
KEY PERSONNEL REQUIREMENTS FOR PROJECT DELIVERY 80
TRAINING AND CAPACITY BUILDING 81
USER SUPPORT AND MAINTENANCE OF THE INTEGRATED ITMS SOLUTIONS FOR 5 YEARS 82
Application Monitoring and Compliance to Service Level Agreements 82
Application support including modification and integrations with future systems 83
Contingency plans for Application & Data recovery 83
Issue Management 83

Software Change and Version Control *84*
Maintenance of Configuration Information & System documentation *85*

7. OPERATIONS AND MAINTENANCE OF CLOUD HOSTED ITMS SOLUTION 86

HELP DESK SERVICES 86
MONITORING, ADMINISTRATION & MANAGEMENT SERVICES OF CLOUD 87
BACKUP & RESTORE AND ARCHIVAL SERVICES 89
STORAGE ADMINISTRATION AND MANAGEMENT SERVICES 89
DATABASE ADMINISTRATION AND MANAGEMENT SERVICES 90
USER ADMINISTRATION AND SECURITY 90
SECURITY ADMINISTRATION OF IT SOLUTIONS 90
NETWORK MONITORING & MANAGEMENT SERVICES 91
ANNUAL MAINTENANCE CONTRACT 91
ANNUAL TECHNICAL SERVICES 92

8. TECHNICAL SPECIFICATIONS-HARDWARE 93

9. UNPRICED BILL OF QUANTITY: 107

10. SERVICE LEVEL AGREEMENT 111

OBJECTIVES 111
SLA MANAGEMENT & MONITORING TOOL 111
DEFINITIONS 111
COMMENCEMENT AND DURATION OF SLA 112
INTERPRETATION & GENERAL INSTRUCTIONS 112
IMPLEMENTATION SERVICE LEVEL 113
OPERATION SERVICE LEVEL 114
SLA for AFCS *116*
SLA for AVLS *117*
SLA for PIS *117*
SLA for Web Application *119*
SLA for Mobile Application *120*
SLA for DC (on cloud) *120*
SLA for Helpdesk *121*

11. PAYMENT TERMS: 123

12. EXIT MANAGEMENT 125

13. GENERAL CONDITIONS OF CONTRACT 126

GENERAL GUIDELINES 126
INTERPRETATION 126
KEY PERFORMANCE MEASUREMENTS 126
COMMENCEMENT &PROGRESS 127
TRADEMARKS, PUBLICITY 127
EVENTS OF DEFAULT BY THE BIDDER 127
CONSEQUENCES OF DEFAULT 128
DATA OWNERSHIP 128
OTHER CONDITIONS 128
INDEMNITY 128
JURISDICTION OF COURTS 128
MUTUAL SETTLEMENT 128
DISPUTES AND ARBITRATION 129
GOVERNING LAW AND JURISDICTION 129
EXTENSION OF TIMELINES 129
TERMINATION 129

FORCE MAJEURE 129
EXCEPTIONS TO FORCE MAJEURE 130
EXCUSED PERFORMANCE 130
EFFECT OF FORCE MAJEURE EVENT 131

14. FORMATS FOR PROPOSAL 132

PRE-QUALIFICATION COVER LETTER 132
FORMAT TO SHARE BIDDER'S AND BIDDING FIRMS PARTICULARS 134
TECHNICAL PROPOSAL BID COVER LETTER 135
FORMAT OF SENDING PRE-BID QUERIES 137
FINANCIAL PROPOSAL COVER LETTER 138
FINANCIAL PROPOSAL FORMAT 140

15 ANNEXURE 145

ANNEXURE A: FORMAT FOR DECLARATION BY THE BIDDER/ALL MEMBERS OF CONSORTIUM FOR NOT BEING BLACKLISTED /DEBARRED 145
ANNEXURE B: PERFORMANCE SECURITY - BANK GUARANTEE FORMAT 147
ANNEXURE C: NON-DISCLOSURE AGREEMENT 149
ANNEXURE D: DECLARATION OF DATA SECURITY 152
ANNEXURE E: POWER OF ATTORNEY FOR SIGNING THE BID 153
ANNEXURE F: POWER OF ATTORNEY FOR LEAD MEMBER BY THE OTHER CONSORTIUM MEMBER 154
ANNEXURE G: CONSORTIUM AGREEMENT 156
ANNEXURE H: NET WORTH CERTIFICATE 158
ANNEXURE I: ANNUAL TURNOVER OF THE BIDDER (TURNOVER OF LEAD BIDDER IN THE CONSORTIUM) 159
ANNEXURE J: CONTACT DETAILS OF OFFICIALS FOR FUTURE CORRESPONDENCE REGARDING THE BID PROCESS- LEAD BIDDER AND ALL MEMBERS OF CONSORTIUM: 160
ANNEXURE K: FORMAT FOR PROJECT CITATION BY THE BIDDER/ANY CONSORTIUM MEMBER 161
ANNEXURE L: FORMAT FOR PRE-QUALIFICATION CHECKLIST 162
ANNEXURE M: FORMAT FOR TECHNICAL EVALUATION CHECKLIST 163
ANNEXURE N: FORMAT OF RESUME 164
ANNEXURE O: MANUFACTURERS'/PRODUCERS' AUTHORIZATION FORM 166

1. Invitation for Proposal

CRUT hereby invites *RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha*.

Bidder/Agencies are advised to study this RFP 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 www.capitalregiontransport.in for the purpose of downloading. The downloaded bidding document shall be considered valid for participation in the Physical bidding process subject to the submission of required tender/ bidding document fee and EMD.

- A three-level selection procedure shall be adopted as stipulated in the RFP
- Bidder (authorized signatory) shall submit their offer Offline Hard Copy - Physically/By Post at the communication address mentioned in the RFP as per formats in the RFP for preliminary qualification, technical and financial proposal. The Tender document fees and EMD should be in form of DD in favor of CRUT from a Nationalized/ Scheduled Bank.

TENDER NOTICE

Capital Region Urban Transport
Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar
Bhubaneswar, Odisha (INDIA), Pin- 751007
Email: crutbbsr@gmail.com; Phone No.: 0674-2548625

Notice no: 761/CRUT/2021 Date: 04-06-2021

Tender Notice

RFP for selection of Integrated Transport Management System (ITMS) partner For Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Odisha.

CRUT invites proposal from interested bidders for the above-mentioned purpose. Please refer Tender document for details.

The Tender Document shall be available from **16/06/2021** onwards in following web portal: www.capitalregiontransport.in. Further, intimation i.e. (Corrigendum/Addendum/Clarifications) shall be uploaded in the above website only.

Applicants are required to submit the duly filled proposals as per the prescribed format on or before **28/07/2021, 3.00 PM**. The proposals received shall be opened on **29/07/2021** at **11.00 AM**.

In case of any query/clarifications, please contact 0674-2548625 or email at crutbbsr@gmail.com

CRUT reserves the right to accept or reject bid process without assigning any reasons thereof.

Sd/-
Managing Director
Capital Region Urban Transport

Key Events and Dates:

The summary of various activities with regard to this invitation of bids are listed in the table below:-

Sl. No.	Particular	Details
1.	Advertising Date	**16/06/2021**
2.	Name of the project	**Selection of Integrated Transport Management System (ITMS) partner for Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha**
3.	RFP Document Download	**From Date: 16/06/2021 Time: 11:00 am**
4.	Last date for Submission of Pre bid Queries	**28/06/2021 up to 4:00 pm**
5.	Pre-Bid Meeting (Virtual)	**30/06/2021 at 11:00 am**
6.	Replies to Pre-bid Queries	**05/07/2021**
7.	Last date for Submission of Bid	**28/07/2021 up to 3:00 pm** 1. Bid Document: Technical Bid & Financial Bid 2. For Presentation: Resume of the Project team member, Project Plan (both Soft copy & Hard copy)
8.	Date and time for opening of Technical Bid (if possible)	**29/07/2021 at 11:00 am**
9.	Date and time for Presentation	Will be intimated later to the Technically Qualified Bidders
10.	Date and time for opening of Financial Bid	Will be intimated later
11.	Mode of Submission Address at which sealed bids are to be submitted	Registered Post/Speed Post/Courier only Address: General Manager (P&A), Capital Region Urban Transport, Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar, Bhubaneswar-751007, Odisha

Other Important Information Related to Bid

Sl. No	Item	Description
1.	Earnest Money Deposit (EMD) –in the form of DD favoring "**Capital Region Urban Transport**" (Refundable)	INR 70,00,000.00 (Seventy Lakh)
2.	RFP Document Fee in the form of DD favoring "**Capital Region Urban Transport**" (Non-Refundable)	INR 11,800.00 (Eleven Thousand Eight Hundred)
3.	Bid Validity Period	One hundred and eighty (180) days from the date of opening of bid
4.	Performance Security Deposit & Last date for furnishing Performance Security Deposit to "**Capital Region Urban Transport**" (By successful Bidder)	10% of project cost in the form of DD & Within fifteen (15) working days of the date of notice of award of the contractor prior to signing of the contract whichever is earlier or as intimated in the LOA issued by CRUT.
5.	Performance Security Deposit validity period	Valid till 90 (Ninety) days beyond the contract / authorization period.

Note: Prospective Bidders may visit CRUT Office for any further information/clarification regarding this RFP on prior appointment during working hours till the date of technical bid submission.

2. Instructions to Bidders

Background

Capital Region Urban Transport operates under the Housing and Urban Development Department (HUDD) of Govt. of Odisha. Bhubaneswar Puri Transport Services (BPTS) was a company which started its operation from 10th Oct, 2010. It was the sole public bus transport provider for Bhubaneswar city and has been mandated to manage and operate the Urban Bus Service on intra city and on intercity routes in and between Bhubaneswar and its surrounding areas. Through a Govt. notification dated 19.01.2018 issued by H&UD Department the name of BPTS changed to Capital Region Urban Transport (CRUT) with a new board structure and new jurisdiction for providing transport services.

CRUT is responsible for providing transport facilities within Bhubaneswar Development Authority (BDA), Cuttack Development Authority (CDA) and Puri-Konark Development Authority (PKDA) area. CRUT with the objective of improving public transport services in capital region of Odisha has engaged private operators for operating bus operations and managing its services on gross cost contract mode. CRUT retains full responsibility for bus operations and revenue collection and absorbs the associated revenue risks. CRUT has launched the Bus Service under the "Mo Bus" brand. Apart from bus transport, CRUT has also planned for launching E Vehicles for E-Rides in near future. In the process of operating and managing public transport operations CRUT is engaged with various technology service provider facilitating intelligent transport management system.

Purpose

With a vision to be "The Preferred Nodal Public Road Transport Provider of the State with increased Revenue Contribution and Market Share in next 5 Years" CRUT envisages establishing and strengthening bus services in Bhubaneswar, Cuttack, Puri, Konark and Khurdha. For this purpose, CRUT is desirous of implementing a "**Smart Transit Project"** which includes comprehensive technology solutions for ticketing and digital payments. The two key objectives of this programme are:

a) To increase the adoption and usage of public bus transport

b) To migrate to cash-less, contactless, digital ticketing and payments in transit vehicles,

c) To procure latest quality electronic ticketing machines for efficient bus operations

Following are the features that shall be considered during this project which would be implemented across all the Fleets.

- Automatic Fare Collection System ("AFCS")
- In-bus Electronic Ticketing Machines ("ETM"s)
- Common mobility card/CRUT Mobility Card
- Mobile ticketing
- Automatic vehicle location system
- Cloud based Data Centre ("DC")
- Operations & maintenance of the systems during the O&M Period
- Reports and Dashboard
- Adhere to all Data confidentiality, Security and safety standards and protocol

Other modules (shall be taken up once priority requirements are successfully implemented; detailed scope of work will be provided by CRUT) under the provision of 'Change Request' section-

- Conductor-less buses
- Paperless ticketing
- Integration with CRUT's other ITMS products

In view of the same, CRUT has decided to float an RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha.

Cost of RFP

Prior to submitting the Bids, the Bidders shall pay Bid Document Fee in form of DD in favour of CRUT as part of Physical submission. It is clarified that the Bid Document Fee is non-refundable.

Change in Ownership

By submitting the Bid, the Bidder shall be deemed to have acknowledged and agreed that in the event of a change in control of the Bidder itself or an Associate whose Technical Capacity or the Holding Company whose Financial Capacity was taken into consideration for the purposes of Short Listing and Qualification under and in accordance with this RFP, the Bidder shall be deemed to have knowledge of the same and shall be required to inform the CRUT along with all relevant particulars about the same. CRUT may, in its sole discretion, approve the same or disqualify the Bidder or withdraw the LOA from the Selected Bidder, as the case may be. In the event such change in control occurs after signing of the Agreement but prior to financial close of the Project, it would, notwithstanding anything to the contrary contained in the Agreement, be deemed to be a breach of the Agreement, and the same shall be liable to be terminated without the CRUT being liable in any manner whatsoever to the Bidder. In such an event, notwithstanding anything to the contrary contained in the Agreement, the CRUT shall be entitled to forfeit and appropriate the Bid Security or Performance Security, as the case may be, as damages, without prejudice to any other right or remedy that may be available to the CRUT under the Bid Documents and/ or the Agreement or otherwise. CRUT shall keep the Hardware and Software so deployed by the Bidder.

Transfer of RFP

The Bidding Document is not transferable to any other Bidder. The Bidder who purchases the document and submits the Bid shall be the same.

Consortium

Maximum two parties can form consortium. From here onwards it is advised to consider the bidder as lead bidder in case of consortium.

Sub-Contracting Conditions

Bidder is not allowed to sub-contract the work.

Completeness of Response

- Bidders are advised to study all instructions, forms, terms, requirements and other information in the RFP documents carefully. Submission of bid shall be deemed to have been done after careful study and examination of the RFP document with full understanding of its implications.
- The response to this RFP should be full and complete in all respects. Failure to furnish all information required by the RFP document or submission of a proposal not substantially responsive to the RFP document in every respect will be at the Bidder's risk and may result in rejection of its Proposal.

Proposal Preparation Costs

- The Bidder shall submit the bid at its cost and CRUT shall not be held responsible for any cost incurred by the Bidder. Submission of a bid does not entitle the Bidder to claim any cost and rights over CRUT and CRUT shall be at liberty to cancel any or all bids without giving any notice.
- All materials submitted by the Bidder shall be the absolute property of CRUT and no copyright/patent etc. shall be entertained by CRUT.

Right to vary the scope of the work

CRUT reserves the right to modify the scope of work at any time during the contract period on mutual agreement.

Bidder Inquiries

Bidder shall e-mail their queries at below mentioned e-mail address at crutbbsr@gmail.com. The response to the queries will be published on www.capitalregiontransport.in. No queries will be entertained thereafter. This response of CRUT shall become integral part of RFP document. CRUT shall not make any warranty as to the accuracy and completeness of responses. CRUT shall endeavour to respond to the questions raised or clarifications sought by the Bidders. However, CRUT reserves the right not to respond to any question or provide any clarification, in its sole discretion and is not under any obligation to entertain/ respond to suggestions made or to incorporate modifications sought for.

Amendment of RFP Document

- All the amendments made in the document would be published on the Portal and shall be part of RFP.
- The Bidders are advised to visit the aforementioned website/portal on regular basis to check for necessary updates. The CRUT also reserves the right to amend the dates mentioned in this RFP.

Supplementary Information to the RFP

If CRUT deems it appropriate to revise any part of this RFP or to issue additional data to clarify an interpretation of provisions of this RFP, it may issue supplements to this RFP. Any such corrigendum shall be deemed to be incorporated by this reference into this RFP.

CRUT's Right to terminate the process

CRUT may terminate the RFP process at any time and without assigning any reason. CRUT reserves the right to amend/edit/add/delete any clause of this Bid Document. This will be informed to all and will become part of the bid/RFP and information for the same would be published on the www.capitalregiontransport.in

CRUT's Right to accept any Bid and to reject any or All Bids

CRUT reserves the right to accept or reject any Bid, and to annul the bidding process and reject any or all Bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for CRUT's action.

Earnest Money Deposit (EMD)

For Earnest Money Deposit (EMD) submission shall be done. Any Bid not accompanied with EMD shall be rejected. Bidder must submit Physical copy of the DD as part of the proposal. Otherwise offer will be treated as irresponsive.

- The EMD shall be denominated in Indian Rupees only. No interest will be payable to the Bidder on the amount of the EMD.
- Bids submitted without adequate EMD will be rejected.
- Unsuccessful Bidder's EMD shall be returned within 60 days from the date of signing of contract with the successful Bidder.
- EMD of Successful Bidder will be returned after the award of contract and submission of the Performance Security within specified time and in accordance with the format given in the RFP.
- EMD shall be non-transferable.
- The EMD may be forfeited:
    - If a Bidder withdraws his bid or increases his quoted prices during the period of bid validity or its extended period, if any.
    - In case of a successful Bidder, if the Bidder fails to sign the contract in accordance with the terms and conditions.
    - If during the bid process, a bidder indulges in any such deliberate act as would jeopardize or unnecessarily delay the process of bid evaluation and finalization.
    - If during the bid process, any information is found false/fraudulent/mala fide, then CRUT shall reject the bid and, if necessary, initiate action.

Language of Bids

This bid should be submitted in English language only. If any supporting documents submitted are in any language other than English, then the translation of the same in English language is to be duly attested by the Bidder and submitted with the bid, and English translation shall be validated at CRUT's discretion.

Patent Claim

In the event of any claim asserted by a third party of infringement of copyright, patent, trade mark or industrial design rights arising from the use of the goods or any part thereof, the Bidder shall expeditiously extinguish such claim. If the Bidder fails to comply and CRUT is required to pay compensation to a third party resulting from such infringement, the Bidder shall be responsible for such compensation, including all expenses, court costs, lawyer fees etc. CRUT shall give notice to the Successful Bidder(s) of any such claim and recover it from the Bidder.

Intellectual property rights

CRUT shall have perpetual, exclusive license for products and related solutions, fixes provided pursuant to this work order, any bespoke development done during the term of contract and for any material developed or otherwise obtained by the Bidder.

The ownership of all IP including all source code, trademarks, patents, products, fixes, related solutions and materials related to this work order lies with the bidder.

"Product" means any web- based services, or materials comprising commercially released, pre-release or beta products (whether licensed for a fee or no charge) and any derivatives of the foregoing which are made available to CRUT 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.

Contact Details

For any clarifications & communication with reference to the RFP documents, the Bidders are expected to communicate at the contact information provided in the data sheet.

Pre-bid queries on RFP

Bidder shall send in their pre-bid queries as prescribed in the format specified in this RFP to the contact address at which the bids are to be submitted as well as to CRUT's official emailed mentioned in the RFP. The response to the queries will be published on www.capitalregiontransport.in. No telephonic queries will be entertained. Pre-bid queries may be sent to this e-mail ID: crutbbsr@gmail.com

Number of Bids

The Bidder is eligible to submit only one Bid for the Project. In case of multiple Bids by a Bidder all such Bids shall be rejected and their EMD shall stand forfeited.

Verification of Information

The Bidders are encouraged to submit their respective Bids after ascertaining for themselves the quality and quantity of requirement, availability of power, and other utilities, handling and storage of materials, applicable laws and regulations, labor laws, local bye-laws and any other matter considered relevant by them which will affect the outcome of the Project.

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

- Made a complete and careful examination of the Bidding Document;
- Received all relevant information requested from the CRUT ;

- Acknowledged and accepted the risk of inadequacy, error or mistake in the information provided in the RFP or furnished by or on behalf of the CRUT relating to any of the matters referred above; and
- Agreed to be bound by the undertakings provided by it under and in terms hereof.

The CRUT shall not be liable for any omission, mistake or error on the part of the Bidder in respect of any of the above or on account of any matter or thing arising out of or concerning or relating to the Bidding Document or the Bidding Process, including any error or mistake therein or in any information or data given by the CRUT. It is the sole responsibility of the Bidder to ascertain the accuracy of the data provided by CRUT.

Bid Submission Format

The entire proposal shall be submitted strictly as per the format specified in this Request for Proposal. Bids with deviation from this format are liable for rejection.

Mode of Submission of the Bid

The bidder shall submit the bid by registered post/speed post/courier only to the following address, any other mode of submission shall not acceptable.

Address:
General Manager (P&A), Capital Region Urban Transport
Block-1,2nd Floor, BMC Bhawani Mall, Saheed Nagar, Bhubaneswar, Pin-751007, Odisha

Bid Submission Instructions

The Bids submitted by the Bidder shall comprise of the following 3 items:

- Tender Fee, EMD and Pre-qualification criteria
- Technical bid and Demonstration
- Financial bid

	Documents Type	**Document Format**
Tender Fee, EMD Detail & Pre-Qualification		
1.	Tender Fee	DD/Banker's Cheque
2.	EMD	DD/Banker's Cheque
3.	Pre-qualification	As per the format mentioned against the respective eligibility criteria clause.
Technical Qualification Documents and Demonstration		
4.	Technical Bid and Demonstration	As per the format mentioned against the respective eligibility criteria clause
Financial Bid		
5.	Financial Bid	As per the format mentioned

The Bidder should ensure that all their documents, as mentioned in this RFP/ bidding document, are submitted along with the bid and in the prescribed format only in proper indexing & hard binding.

Non- submission of the required documents or submission of the documents in a different format/contents may lead to the rejection of the bid proposal submitted by the Bidder.

Tender Fee, EMD Detail and Pre-qualification criteria file should contain:

- EMD in form of Bank Guarantee
- Tender Fee in form of Demand draft
- Signed copy with company seal of this RFP.
- The Bid will have to be signed and submitted by the proper authorized person as appointed by the Bidder.
- Bid in the prescribed format along with Annexes and supporting documents;
- Power of Attorney for signing the documents;
- Copies of Bidder's duly audited balance sheet and profit and loss account for the preceding 3 (three) years, i.e., 2019-20, 2018-19, 2017-18
- Duly certified by Statutory Auditor on Certificates for Average Annual Turnover and Net worth for the last 3(three) Financial Years.
- Non blacklisting declaration as per Annexure.

- The Bidder shall submit the Tender in 2 (two) parts consisting of Part-I (Technical Bid) and Part-II (Financial Bid) each in separate envelopes duly sealed and super scribed with the Tender Notice Number.

- The instruments of Earnest Money Deposit & Cost of Tender document are to be put in a separate envelope duly sealed and super scribed with the word "Earnest Money Deposit & Cost of Tender Document".

- All the 3 (three) envelopes containing (a) Part-I (Technical Bid), (b) Part-II (Financial Bid) and (c) Part-III (Earnest Money Deposit & Cost of Tender) shall be put combined in a 4th (fourth) envelope duly sealed, super scribed with Tender Notice No., Name of the work, date of opening of Technical Bid and addressed to GM (P & A), Capital Region Urban Transport, Bhubaneswar.

Disqualification

The Proposal is liable to be disqualified in the following cases or in case the Bidder fails to meet the bidding requirements as indicated in this RFP:

- Proposal not submitted in accordance with the procedure and formats prescribed in this document or treated as non-conforming Proposal.
- During validity of the Proposal, or its extended period, if any, the Bidder increases their quoted prices.
- Proposal is received incomplete.
- Proposal is received after due date and time.
- Proposal is not accompanied by the EMD.
- If the Bidder provides quotation only for a part of the Project.
- Information submitted in Technical Proposal is found to be misrepresented, incorrect

or false, accidentally, unwittingly or otherwise, at any time during the processing of the Contract (no matter at what stage)

- Financial Proposal is enclosed with the Technical Proposal.
- Bidder tries to influence the Proposal evaluation process by unlawful/corrupt/fraudulent means at any point of time during the Bid process.
- In case anyone Bidder submits multiple proposals or if common interests are found in two or more Bidders, the Bidders are likely to be disqualified, unless additional Proposals/Bidders are withdrawn upon notice immediately.
- Bidder fails to deposit the Performance Security (in form of BG) or fails to enter into a Contract within 30 Days of the date of issue of Letter of Intent or within such extended period, as may be specified by the CRUT.
- The validity of the bids submitted before deadline shall betill1 80days from the date of opening of the Bids.
- While evaluating the Proposals, if it comes to the CRUT's knowledge expressly or implied, that some Bidders may have colluded in any manner whatsoever or otherwise joined to form an alliance resulting in delaying the processing of Proposal then the Bidders so involved are liable to be disqualified for this Contract as well as for a further period of three years from participation in any of the RFPs floated by the CRUT.
- If the Bid Security Pre-Qualification Proposal, Technical Proposal contain any information on price, pricing policy, pricing mechanism or any information indicative of the Financial aspects of the Bid
- Bidder doesn't agree to the Terms and Conditions stipulated in the RFP or the Draft / Signed Contract Agreement.

Late Proposal and Proposal Validity Period

Proposals received after the due date and the specified time (including the extended period if any) for any reason whatsoever, shall not be entertained and shall not be opened. The validity of the proposals submitted before deadline shall be till 180 days from the date of submission of the proposal.

Modification and Withdrawal of Proposals

No Proposal shall be withdrawn in the interval between the deadline for submission of proposals and the expiration of the validity period specified by the Bidder on the Proposal form. Entire EMD shall be forfeited if any of the Bidders withdraw their proposal during the validity period.

Non-conforming Proposals

A Proposal may be construed as a non-conforming proposal and ineligible for consideration:

- If it does not comply with the requirements of this RFP.
- If the Proposal does not follow the format requested in this RFP or does not appear to address the particular requirements of the CRUT.

Acknowledgement of Understanding of Terms

By submitting a Proposal, each Bidder shall be deemed to acknowledge that he/she has carefully read and accepts all sections of this RFP, including all forms, schedules, annexure, corrigendum and addendums (if any) hereto, and has fully informed itself as to all existing conditions and limitations.

3. Bid Evaluation Methodology

Overall Methodology

Evaluation of the Technical and financial proposals will be based on **Quality cum Cost Based Selection** mode with weightage of **80% and 20%** for technical and financial proposals, respectively.

a) In the first phase, the Technical Proposals shall be evaluated on the basis of eligibility criteria as mentioned in this RFP.

b) In the second phase, the agency which satisfy the eligibility criteria shall be evaluated as per the methodology given below for evaluation of technical proposal and shall be given a "Total Score" out of 100. The "Total Score" shall be converted to "Technical Score" as per the methodology given.

c) Financial proposals of qualified agency shall be opened publicly on the date and time which will be intimated later, in the presence of firm's representatives who choose to attend. The financial offers of unsuccessful applicants will be returned without opening.

d) Proposals will finally be ranked according to their combined Score (S) calculated based on technical (St) and financial (Sf) scores as follows:

S=St*Tw + Sf*Fw

Bid Opening

- Step 1 containing EMD, Tender Fee and Pre-Qualification shall be opened initially in the presence of Bidders representative.
- Step 2 containing the Technical Proposal shall be opened only of those Bidders who qualify in the Step 1.
- Step 3 containing the Financial Proposal shall be opened only of those Bidders who qualify in the Step 1 & 2 and will remain unopened until the time of opening of the Financial Proposals.
- At the end of the evaluation of Step 1 and Step 2, CRUT shall invite Bidders who have qualified for the opening of the Financial Proposals. The date, time, and location of the opening of Financial Proposals will be informed by CRUT to qualified Bidders

Bid Evaluation Committee

CRUT's Bid Evaluation Committee shall oversee the bid evaluation process and submit its recommendation to Competent Authority whose decision shall be final.

Process of Evaluation

- Bidders who qualify in Step 1 shall be considered for further Technical evaluation and demonstration.
- Bidder shall be evaluated for **Step 1 as per EMD, Tender Fee and prequalification criteria** mentioned above at clause 3.4.1. The Bidders who fulfill all the prequalification criteria in step 1 and has deposited EMD and RFP document fees, would be evaluated as per technical bid scrutiny and demonstration as mentioned in Step 2.
- Bidders who qualify in step 2 will be eligible for opening of financial bid in Step 3.

- The competent authority reserves the right to accept or reject any or all bids without giving any reasons thereof.
- The Bidders are required to submit all required documentation in support of the evaluation criteria specified (e.g., Detailed Project citations and completion certificates, client contact information for verification, and all others) as required for pre-qualification evaluation.
- At any time during the Bid evaluation process, CRUT may seek oral or written clarifications from the Bidders. CRUT may seek inputs from their professional and technical experts in the evaluation process.
- CRUT reserves the right to do a reference check of the past experience stated by the Bidder. Any feedback received during the reference check shall be taken into account during the pre-qualification evaluation process.
- The Financial Proposals of Bidders who do not qualify technically shall be kept unopened
- CRUT reserve the right to accept or reject any or all bids without giving any reasons thereof.
- CRUT shall inform to the technically shortlisted Bidders about the date and venue of the opening of the financial proposals.

Qualification Criteria

The pre-qualification proposals (step 1) of only those Bidders, whose Tender Fee and EMD are in order, shall be opened. The bids will then be passed on to the bid evaluation committee constituted by CRUT for evaluation of bids. The Bidders will be assessed on the pre-qualification criteria as defined below.

Pre-qualification/ Eligibility Criteria		
Sl. No.	**Eligibility Criteria**	**Document Proof**
	Bidders Competency	
1	The Bidder/All members of consortium shall be a registered company/Partnership firm/LLPs. In case of Consortium MoU to be signed by both the parties.	Copy of certificate of Incorporation, MOA & AOA for Companies
		Certificate of Incorporation & LLP agreement for LLPs
		Partnership Deed with credential of partners for partnership firm
		Proprietorship Trade license
		For global players, equivalent certificate in the country of incorporation (GFR Rule for Make In India should be fulfilled)
		In case of consortium, MoU signed by both the parties
		Power of Attorney to the authorised person of the lead bidder (as per the format provided)
2	The Bidder/All members of consortium should have or shall be ready to set up a project office in Bhubaneswar with 30 days of issuance of LOA/I.	Undertaking by Bidder/All consortium members

3	The Bidder should not have been blacklisted by any Central/State Government Organization or Department in India at the time of submission of the bid.	Declaration by the Bidder and all consortium members as per format given in the bid document
	Financial Stability	
4	The Bidder must have an **Average Annual Turnover** of at least INR 20(Twenty) Crore from Last 3 financial years (2017-18, 2018-19, 2019-20) In case of consortium, the lead Bidder must have an Average Annual Turnover of at least INR 20(Twenty) Crore from Last 3 financial years (2017-18, 2018-19, 2019-20) And The Consortium Partner must have an Average Annual Turnover of at least INR 5(Five) Crore from Last 3 financial years (2017-18, 2018-19, 2019-20) The Bidder/Lead Bidder (in case of consortium) must have Positive Average Net Worth of Rs.5 (Five) Crore from Last 3 financial years (2017-18, 2018-19, 2019-20) Other consortium member must have positive net worth of 1 Cr. From Last 3 financial years (2017-18, 2018-19, 2019-20)	• Audited Financial Statement for Financial years 2017-18, 2018-19, 2019-20 by statutory auditor • Turn over Certificate and Net worth Certificate from statutory auditor clearly specifying the Average Annual Turnover & Average Net Worth of the Bidder for the specified years. • GST return Copy for the specified years, GST certificate, certified copies of valid PAN documents shall be furnished
5	As on last date of submission of the proposal, the Bidder/all members of consortium shall have not been blacklisted by Central/State Government/PSU entity in India or similar agencies globally for unsatisfactory past performance, corrupt, fraudulent or any other unethical business practices, in past three (3) years. Bidders/Any consortium member shall not have any proceedings pending before DRT and/or BIFR	Undertaking by the authorized signatory as per the Form in the Annexure to be mandatorily submitted
	Technical Stability	
6	The Bidder/The Lead Bidder (in case of consortium) should have experience of implementing at least 2 different projects related to Integrated/Intelligent Transport Management System for bus operations of any Indian/Foreign cities or states in last five years as on last date of submission of RFP of value not less than INR 15 Cr. Other member of Consortium must have at least one similar project experience related to Integrated/Intelligent Transport Management System for bus operations of any Indian/Foreign cities or states in last five years as on last date of submission of RFP of value not less than INR 5 Cr	Copy of Work Order & Work Completion certificate of the project from respective client clearly stating the scope, current status (percentage completion), System Stability Status and the contact details of the authority. Project cost should be mentioned clearly. Ongoing project experience will not be considered.

7	The Bidder/all members of consortium should possess any of the below two certifications:	Copy of the Valid Certificate signed and stamped by the Authorized Signatory
	ISO 9001:2015	
	ISO 27001	
	CMMI Level 3	

Evaluation of Technical Proposal

Each proposal which fulfils in pre-qualification criteria shall be scrutinized further technically for checking whether the offered solution meets the RFP requirements. In case, the bid is found technically qualified then the Bidder will qualify for further evaluation of Step 3 (Financial Bid).

In case in CRUT's opinion if there is a material deviation from the RFP requirement, it will treat the bid as non-responsive and may disqualify the Bidder. The evaluation of technical proposal such disqualified Bidder shall not be considered. CRUT reserves the right to decide whether the deviation is material or not.

- The Technical Proposal shall be evaluated based on the criteria given in the Table: 1 below to get the "Total Score" out of 100.

Technical Evaluation Criteria

The table below describes the Technical Evaluation criteria along with the weightages for each parameter. Technical Evaluation criteria to be defined below: Such experience must be demonstrated through an explicit contract/Work order/MoU/completion certificate duly supported by affidavit with a public sector entity/ Government or semi Government Department or a private entity.

Table 1: Technical Evaluation criteria

Technical Marking Criteria				
Sr.no.	**Criteria**	**Break-up of Marks (Sole Bidder)**	**Document Proof to be submitted**	**Maximum Marks**
TQ1	Average Annual Turnover of the Bidder/ (lead bidder & Consortium Member in case of consortium) during last three Financial Years-2017-18, 2018-19 and 2019-20	Rs.20 crores (INR): 7 marks For every additional turnover of Rs.2 crores-1 mark subject to maximum of 3 marks.	1-Certificate from the Statutory Auditor clearly specifying the annual turnover for the specified years. 2-Audited and Certified copies of Balance Sheet and Profit/Loss Account of last 3 Financial Years last three (03) financial years	10
	Average Positive Net worth of the Bidder/ the lead Bidder (in case of consortium) during last three Financial Years-	Rs.5 crore :3 marks For every additional Net worth of Rs.1 crore-1 mark subject to maximum of 2 marks.	Certificate from the Statutory Auditor clearly specifying the Average Net Worth during last three Financial Years-	5

	2017-18, 2018-19 and 2019-20		2017-18, 2018-19 and 2019-20	
TQ2	The bidders/any member of consortium should have experience in deploying ITMS or ITMS for public/govt. entities/SPV/STU (India or Abroad) bus operation in last five years from the last date of submission.	200 to 300 Buses/Vehicles: 7 marks 301 to 500 Buses/Vehicles: 10 marks 501 or more Buses/Vehicles: 15 marks	1- Work Order issued & signed by the competent authority of the client entity. 2- Completion Certificate issued & signed by the competent authority of the client entity on letterhead	15
TQ3	The bidders/any member of consortium should have experience in AFCS along with Smart Card and mobile app-based ticketing solution for public/govt. entities/SPVs/STUs (India or Abroad) for public bus system in last five years from the last date of submission.	5 marks for each project (Maximum 15 Marks)	1- Work Order issued & signed by the competent authority of the client entity. 2- Completion Certificate issued & signed by the competent authority of the client entity on letterhead	15
TQ4	The bidders/any member of consortium should have project completion (go live) with complete system integration with the ETM, AFCS, Smart card, mobile ticketing, AVLS and live tracking, etc. of buses across any Public/Govt. Transport agency in last five years from the last date of submission	**For Go Live/Project Completion** • 5 Marks for 1 Project • Additional 2.5 mark for each project completed subject to Maximum 5Marks	1. Work Order issued & signed by the competent authority of the client entity 2. Go-live or Project completion Certificate from Client	10
		For Satisfactory Completion • 3 Marks- 1 Satisfactory Project completion • Additional 1 mark for each satisfactory project completion subject to Maximum 2 Marks Note: The Bidder/The Lead Bidder need to specify the project/s for evaluation as per given format.	1. Work Order issued & signed by the competent authority of the client entity 2- Satisfactory Completion Certificate issued & signed by the competent authority of the client entity on letterhead	5

TQ5	System functionality: The bidder/The Lead Member in case of consortium (Combined experience) will be marked on the basis of number of features present as a part of COTS (Cost-off-the shelf) ITMS/ITMS solution. Note: In case of consortium second member must have any two mandatory System Functionality Module.	10 Marks for availability of 5 sub-modules/systems including 4 Mandatory Modules Additional 1 mark for each additional module up-to a maximum of maximum 5 marks	An undertaking by the bidder to confirm the presence of following modules as a part of COTS. CRUT at any time, before awarding the project, reserves the right to ask the bidder to demonstrate the features declared by them. In case of discrepancy between no. of modules in declaration and actual number of modules present as COTS, CRUT reserves the right to remove the bidder from the process.	15
	1. GIS/Open-Source MAP based Vehicle Tracking System **(Mandatory)**			
	2. Integration with IoT devices with central monitoring Centre **(Mandatory)**			
	3. Role Based Mobile/Web Application across any Public Payment and Public Ticketing (Additional)			
	4. Fleet Management system including driver's app, route planning, re-routing, alerts, destination information, ETA, etc. **(Mandatory)**			
	5. Billing system for vendors of Municipal Corporation/ULBs/Govt. SPVs **(Mandatory)**			
	6. Grievance Redressal System/Incident Management System (Additional)			
	7. Dashboards and MIS for transport system with Role Based Access Control and ranking module for different divisions, departments etc. (Additional)			

	9. Cloud based DC & DR for Central Monitoring System (Additional)			
	10. The system should be fault tolerant with the system capability to handle 3000 vehicles. (Additional)			
TQ6	Project Implementation Approach *(Presentation)*	The solution to be demonstrated to CRUT and CRUT would rate the bidder to their satisfaction on the ability of the bidder to execute the end-to-end solutions as per the Scope of Work	Presentation (soft copy & hard copy), Resume of Project Team, Project Plan	20
		Understanding of Scope- 5 Marks		
		Project Team- 5 Marks (1.25 mark for each resource to be engaged for project implementation)		
		Project Plan (High Level) & Delivery- 5 Marks		
		Over all solution design & approach methodology- 5 Marks		
TQ7	The Bidder/Any member of the consortium certification:	1 mark for each certificate Maximum 5 Marks	Copies of the valid certificate	5
	ISO 9001:2015			
	ISO/IEC/20000			
	ISO 27001			
	CMMI Level 3			
	CMMI Level 5			
	Total			100

Important Note:

1- The Bidder/The Consortium need to submit checklist with indexing, failing of which may lead to disqualification.

2- The Bidder/The Lead Bidder in case of consortium must submit all desired document with page number and proper binding.

The "Total Score" obtained by the bidder as per the technical criteria given above shall be converted to technical score (St) of the concerned applicant as per the following methodology:

- The highest evaluated Technical Proposal (Th) is given the maximum Technical score

(St) of 100.

- The formula for determining the Technical scores (St) of all other Proposals is calculated as following:

St = 100 x T/Th,

in which "St" is the Technical score, "Th" is the highest Technical Score given, and "T" the Total Score of the Proposal under consideration.

Financial Bid Evaluation

CRUT will evaluate Financial Proposals of all the qualified Bidders. If there is a discrepancy between words and figures, the amount in words shall prevail. For any other calculation/ summation error etc. the bid may be rejected. The Bidders shall submit their quote as per the format provided in RFP.

Financial Score: The lowest financial proposal will be given a financial score (Sf) of 100 points. The financial scores of other proposals will be computed as follows:

Sf=100 * Fm/F

(Fm= Lowest financial quote; F= Amount in the Financial Proposal under consideration)

Commercial Evaluation & Award Criteria

- This is a Quality and Cost Based Selection (QCBS).
- The weightage of technical evaluation to financial evaluation will be **80:20**
- Commercial Bids of all Bidders who clear the pre-Qualification (step 1) and technical evaluation criteria will be opened on the prescribed date in the presence of Bidder representatives.
- **The Bidder scoring highest in total sum of technical and financial evaluation as per the formula S = St * 0.8 + Sf * 0.2 will be awarded the contract.**

Award of Contract

a) Letter of Acceptance

Prior to the expiration of the period of bid validity, CRUT will notify the successful Bidder in writing or by fax or email, to be confirmed in writing by letter, that its bid has been accepted. The letter of acceptance will constitute the formation of the contract.

b) Signing of Contract

CRUT shall notify the successful Bidder that its bid has been accepted. The Successful Bidder shall enter into contract agreement with CRUT within the time frame mentioned in the Letter of Acceptance to be issued to the successful Bidder by CRUT. Upon the Successful Bidder's furnishing of Performance Security Deposit, CRUT will promptly notify each unsuccessful Bidder.

c) Failure to agree with the Terms & Conditions of the RFP / Contract

Failure of the successful Bidder to agree with the Terms & Conditions of the RFP / Contract shall constitute sufficient grounds for the annulment of the award, in which event CRUT may invite the next best Bidder for negotiations or may call for fresh RFP.

d) Non-Disclosure Agreement (NDA)

The Successful Bidder has to sign the Non-Disclosure Agreement with CRUT for not disclosing/sharing of information and data stored in the server of the Bidder directly or indirectly.

Security Deposit

- The successful Bidder needs to deposit/submit a security deposit as per amount mentioned in Data sheet as Bank Guarantee from scheduled commercial bank only. The security deposit shall be valid for a period of 1 month from the end of contract period. It should be submitted within 4 weeks from date of issue of Letter of Acceptance, as notified by CRUT, or as intimated by CRUT.
- The security deposit will be forfeited if vendor has not fulfilled the terms and conditions as per bid document.
- Security Deposit will be released after 2 months from the end of contract.

Bid Prices

The Bidder has to quote for "RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha" in the format given for financial bid. Validity of Bid shall be of 180 days from date of opening of bids.

Bid Currency

The rates quoted shall be in Indian Rupees only.

Signature

A representative of the Bidder, who is authorized to commit the Bidder to contractual obligations, must sign with the Bidder's name and seal on all pages of the Bid, including the tender/bid document. All obligations committed by such signatories must be fulfilled.

Correction of errors

The Bidder is advised to take adequate care in quoting the rate. No excuse for corrections in the quoted rate will be entertained afterwards. The corrections or overwriting in bid document shall be initialled by person signing the Bid form.

Corrections to Arithmetic errors

In case of discrepancy between the amounts mentioned in figures and in words, the amount in words shall govern. The amount stated in the Bid form, adjusted in accordance with the above procedure, shall be considered as binding.

Fraud and Corrupt Practices

- The Bidders and the irrespective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process. Notwithstanding anything to the contrary contained herein, the CRUT shall reject a Bid without being liable in any manner whatsoever to the Bidder if it determines that the Bidder has, directly or indirectly or through an agent, engaged incorrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process.
- Without prejudice to the rights of the CRUT, if a Bidder is found by the CRUT to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process, such Bidder shall not be eligible to participate in any tender or RFP issued during a period of 3 (three) years from the date such Bidder is found by the CRUT to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as the case maybe.
- For the purposes, the following terms shall have the meaning hereinafter respectively assigned to them:
- Corrupt practice means
  - The offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the actions of any person connected with the Bidding Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of the CRUT who is or has been associated in any manner, directly or indirectly with the Bidding Process or the LOA or has dealt with matters concerning the contract agreement or arising there from, before or after the execution thereof, at any time prior to the expiry of one year from the date such official resigns or retires from or otherwise ceases to be in the service of the CRUT, shall be deemed to constitute influencing the actions of a person connected with the Bidding Process); or Engaging in any manner whatsoever, whether during the Bidding Process or after the issue of the LOA or after the execution of the Contract Agreement, as the case may be, any person in respect of any matter relating to the Project or the LOA or the Contract Agreement, who at any time has been or is a legal, financial or technical adviser of the CRUT in relation to any matter concerning the Project;
- Fraudulent practice means a misrepresentation or omission of facts or suppression of facts or disclosure of incomplete facts, in order to influence the Bidding Process;
- Coercive practice means impairing or harming or threatening to impair or harm, directly or indirectly, any person or property to influence any person's participation or action in the Bidding Process;
- Undesirable practice means establishing contact with any person connected with or employed or engaged by the CRUT with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Bidding Process; or Having a Conflict of Interest;
- Restrictive practice means forming a cartel or arriving at any understanding or arrangement among Bidders with the objective of restricting or manipulating a full and fair competition in the Bidding Process.
- The bidder/all the members of consortium will be responsible for misconducts/malpractices/unfair means of information exchange or data sharing of any of the

employee deployed or involved with project. These practices will be considered as criminal practices and will lead to legal actions & blacklisting.

Supplementary Information/Corrigendum/Amendment to the RFP

- At any time prior to the deadline (or as extended by CRUT) for submission of bids, CRUT for any reason, whether at its own initiative or in response to clarifications requested by the Bidder may modify the RFP document by issuing amendment(s) or issue additional data to clarify an interpretation of the provisions of this RFP. Such supplements / corrigendum to the RFP issued by CRUT would be displayed on https://www.capitalregiontransport.in/, any such supplement / corrigendum / amendment shall be deemed to be incorporated by this reference into this RFP. Any such supplement / corrigendum / amendment will be binding on all the Bidders. CRUT will not be responsible for any misinterpretation of the provisions of this Tender document on account of the Bidders failure to update the Bid documents based on changes announced through the website.

Miscellaneous

The Bidding Process shall be governed by, and construed in accordance with, the laws of India and the Courts at Odisha, India shall have exclusive jurisdiction over all disputes arising under, pursuant to and/ or in connection with the Bidding Process.

The CRUT, in its sole discretion and without incurring any obligation or liability, reserves the right, at any time, to:

- Suspend and/or cancel the Bidding Process and/or amend and/or supplement the Bidding Process or modify the dates or other terms and conditions relating thereto;
- Consult with any Bidder in order to receive clarification or further information;
- Qualify or disqualify any Bidder and/or to consult with any Bidder in order to receive clarification or further information;
- Retain any information and/or evidence submitted to the CRUT by, on behalf of, and/or in relation to any Bidder; and/or
- Independently verify, disqualify, reject and/or accept any and all submissions or other information and/or evidence submitted by or on behalf of any Bidder.
- It shall be deemed that by submitting the Bid, the Bidder agrees and releases the CRUT, their employees, agents and advisers, irrevocably, unconditionally, fully and finally from any and all liability for claims, losses, damages, costs, expenses or liabilities in any way related to or arising from the exercise of any rights and/or performance of any obligations here under, pursuant here to and/ or in connection herewith and waives any and all rights and/ or claims it may have in this respect, whether actual or contingent, whether present or future.
- The Bidder shall acquaint itself with the work and working conditions at site and locality. No claim shall be entertained on this issue after the offer has been submitted.
- The cost of preparing the Bid including a visit to the site or office etc. will not be reimbursed as a direct cost of the assignment and CRUT is not bound to accept any of the Bids submitted.
- CRUT reserves the right to order the final quantity.

- The pages of documents, technical specifications, bids, supporting documents etc. shall be duly signed by the authorized signatory.

4. Scope of Work

About the Project

CRUT envisages strengthening city bus service in the capital region (Puri, Bhubaneswar & Cuttack). These actions seek to promote organized public transport, reduce the use of private vehicles and structure an integrated transport system which offers higher safety, quality, security and reliability for users of public transport corridors. CRUT has planned to implement a comprehensive ticketing and fleet monitoring system using IT/ICT/IOT applications to achieve the following key objectives:

Provide ease and benefits to commuters by providing reliability of services leading to increase in ridership and adoption of public transit

- Enhance non-cash/digital modes of ticketing
- Enable Authority to constantly benchmark operations and maintain service quality of bus operations
- Enable authority to strategize enhancement of public transport & last mile reach

The System Integrator (SI) shall be responsible for supply, installation, commissioning & integration of Integrated Transport Management System (ITMS) along with 5 years of operation & maintenance for public transport services managed by CRUT, Bhubaneswar, Odisha. The SI shall be cognizant of CRUT's objective for the overall initiative to be citizen centric with equitable governance for all Citizens and Business at large.

The Sub-systems and activities envisaged by the Authority to be implemented by SI shall include but not limited to:

Deploy technology including but not limited

- GPS based Vehicle Tracking/Location System ("AVLS")
- Mobile application for live tracking of buses, real-time ETA
- Automatic Fare Collection System ("AFCS")
- Bus Crew Scheduling Solution
- In-bus Electronic Ticketing Machines ("ETM"s)
- CRUT mobility card
- Mobile ticketing
- Cloud based Data Centre ("DC")
- Citizen Apps
- Responsible for
- Operations & maintenance of the systems during the O&M Period
- Comprehensive On ground Operations Assistance excluding Drivers, Conductors and Depots & Terminal Staffs
- Daily Operations Assistance and reconciliation.

- Deployment of staff as necessary to check for ticket-less travel.
- Providing Reports and Dashboard
- Increase in Ridership on the buses and subsequently improve the revenue from the fare box collection
- Deployment of cashiers to collect the fares from the conductors
- Drive Innovation with any advanced technology as it may deem fit to improve the collection on the buses and improve the customer experience.
- Integrate the AVLS with OBU's within the bus to capture, store and analyse diagnostic data. OBU will be in the scope of CRUT.
- Analyse route performance and provide inputs for route optimization, new route planning and other technical support that may be needed to achieve the stated objectives of CRUT.

The SI shall be completely responsible for integration, initialization and start-ups of the equipment supplied. SI would also be responsible for integration of any other devices and equipment supplied by any other vendor that is part of the ITMS. Thereafter, the complete responsibility of operations and maintenance of the ITMS system, including spares and insurance shall lie with the SI for the Contract Period. The Smart Transit Project is to be implemented for entire fleet of CRUT and the details of proposed vehicles operating under City bus services are as under:

Overview of Scope of Work

Sl. No.	Particulars	Description
Hardware Components		
1.	GPS based Vehicle Tracking/Location System ("AVLS")	Supply, installation and configuration in CRUT depots as instructed by CRUT. To track the real-time position of every bus and its route via GPS and driver console. Integration with existing Vehicles. Hardware supply and required software applications
2.	In-bus Electronic Ticketing Machines ("ETM"s)	ETM Handheld with printer and reader for smartcard in all the buses. Count required may be increased or decreased as per the requirement. ETMs increase transparency in ticketing reports and enable real- time flow of ticketing and revenue information. They also form the enabling infrastructure for M-Ticketing, card acceptance and other key digital initiatives. Integration with existing ETMs. Hardware supply and required device level software applications.
3.	CRUT Mobility Card ("CMC")	An RFID card that can be used for payments. Smart cards eliminate cash transactions, and thus cash leakage and cash-handling costs are reduced as well. They also significantly increase the speed and convenience of each transaction. Issuance of cards, necessary hardware and software applications.

Software Components		
4.	Automatic Vehicle Locating System (AVLS)	Development / customization, testing, installation and commissioning of Automatic Vehicle Locating System to display real time location of vehicles and Integration of OBU (OBU to be provided by CRUT) in bus to capture, store & analyse vehicle data
5	Automated Fare Collection System ("AFCS")	Software application to connect all the fare media (cash, card and mobile) and ensure integrated and seamless Operations Assistance and management, irrespective of the point and mode of purchase of ticket chosen by the passenger. Development / customization, testing, installation and commissioning of Automatic Fare Collection System Deployment of AFCS platform and integration with all necessary hardware and software applications.
6.	Cloud Based Common Data Centre	Database, Servers, Security setup, Backup System, Anti-Virus setup etc. for Database
7.	ETM Device & CRUT Mobility Card	Supply, installation and configuration of Smart Card Reader based ticketing machines
8.	Mobile App	Use of New Mobile Application for the purpose of Development/customization, testing, and commissioning of Passenger information system to display bus schedule information, route information, estimated time of arrival and departure. An Android based mobile app for passengers offering live tracking of buses, real- time ETA, journey planner, mobile ticketing etc. Such a mobile application will increase the usage and adoption of public transport by reducing waiting time at bus stops, ensuring seamless connectivity across modes of transport and increasing passenger conveniences at each step of the journey. Software application and third-party integrations.
9.	Mobile Ticketing ("M-ticketing")	M-ticketing to be made available across all forms of transport through the Mobile App. This also includes digital monthly passes and other new forms of multi-journey ticketing and payments. This will increase convenience for passengers and also saves them the cost, time and hassle involved in purchasing physical media such as monthly passes. Deployment of M-Ticketing platform with necessary software applications, third party and payment gateway integration.
10.	Cloud Based Hosting DC and DR	Entire technology platform to be hosted on a cloud data centre to offer flexibility and scalability in terms of computing and storage requirements. The hosting location for the primary and recovery

		data center should be in India adhering to all Security standards and as per Govt. of Odisha or MEITY Guidelines. Set up, Hosting and Maintenance of the primary and recovery data center
11.	Integration with Closed Loop Card Host	Central Clearing House system and Smart Card to be provided by Authority appointed Bank. CRUT will choose the Bank.
12.	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. However, the existing On bus PIS hardware need to be integrated with central ITMS.
13.	Command and Control Centre at CRUT	Set up of Command-and-Control Centre exclusively for CRUT along with Manpower support to manage the operation at CRUT premises.
Other Components		
14.	Annual Contract Maintenance	Annual Maintenance Contract for all hardware and software components during contract period i.e., 5 years post Go-Live
15.	Internet	Successful bidder shall be responsible for providing SIM cards and internet connectivity for smooth functioning of VTS and ETMs at each vehicle
16.	Manpower Support	Successful bidder shall provide adequate Manpower support as required for meeting the scope of the RFP
17.	Training and Handholding	Successful bidder shall provide training to CRUT employees as informed by CRUT

Project Coverage

Geographical Coverage

The proposed system will cover the entire state and all Buses as handed over by CRUT from time to time and will include multiple Bus stop, Bus terminal, Bus Depot across the city.

Project Site/ Work Site: Bus Stops, Bus Terminals, Buses, Bus Depots and Central Control Centre at CRUT 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.

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 all related 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 CRUT.

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.

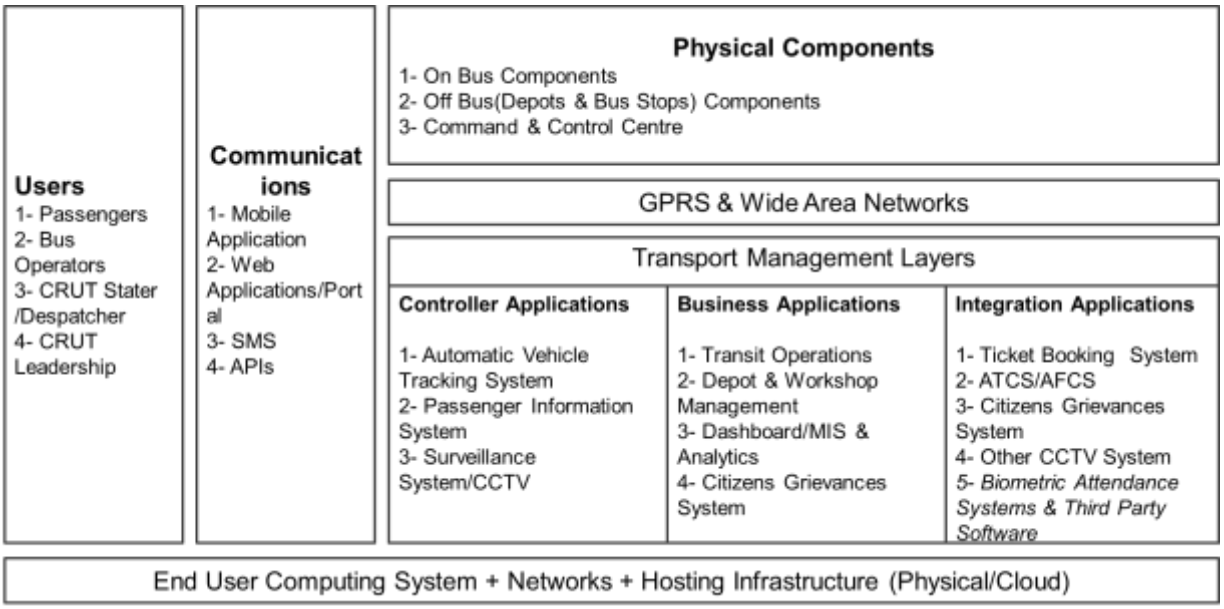
Intelligent Transport Management System (ITMS)

Overview

The integrated view of intelligent transport management system shall enable authority to have a detailed understanding of city-wide transit management system. The system acts as a city-based foundation framework for integrating City Bus services and other city-based transport services with satisfying objectives of diverse set of stakeholders within the city. Transit authority of the city sometimes serves services other than public transportation to its citizens which may include emergency services like fire and ambulance, engineering services etc. and hence if required in future all such services mentioned shall utilize common ITMS infrastructure provided by effective tracking and monitoring of the vehicle via integrated solution and achieve its desirable end objectives.

Solution Summary

Authority envisages implementing ITMS for its operations to bring in world class operational efficiency and automation for its transit operations. ITMS is expected to meet the corporate objectives of enhancing service standards, bring in commuter market approaches, better organization of planning and operations; integration of other transit modes, Para-transit, capital improvements, marketing etc.



ITMS will provide set of tools for achieving authority's objective of offering highly efficient urban local transport to citizens of city. This system shall provide services using modern computing and communications technologies. The system shall collect information about the state of the transport network, process that information and either directly manage the network (e.g. headway management), or allow people to decide how best to use the network (e.g. incident detection, travel news, real time estimated time of arrival and departures). ITMS system shall play an important role in delivering policy objectives, including tackling casualty reduction, traffic congestion and pollution, as well as improving accessibility, providing integrated transport solution and making best use of existing

infrastructure. The system shall deliver noticeable economic benefits through reduced journey times and increased journey time reliability, as well as improvements in safety and reductions in pollution.

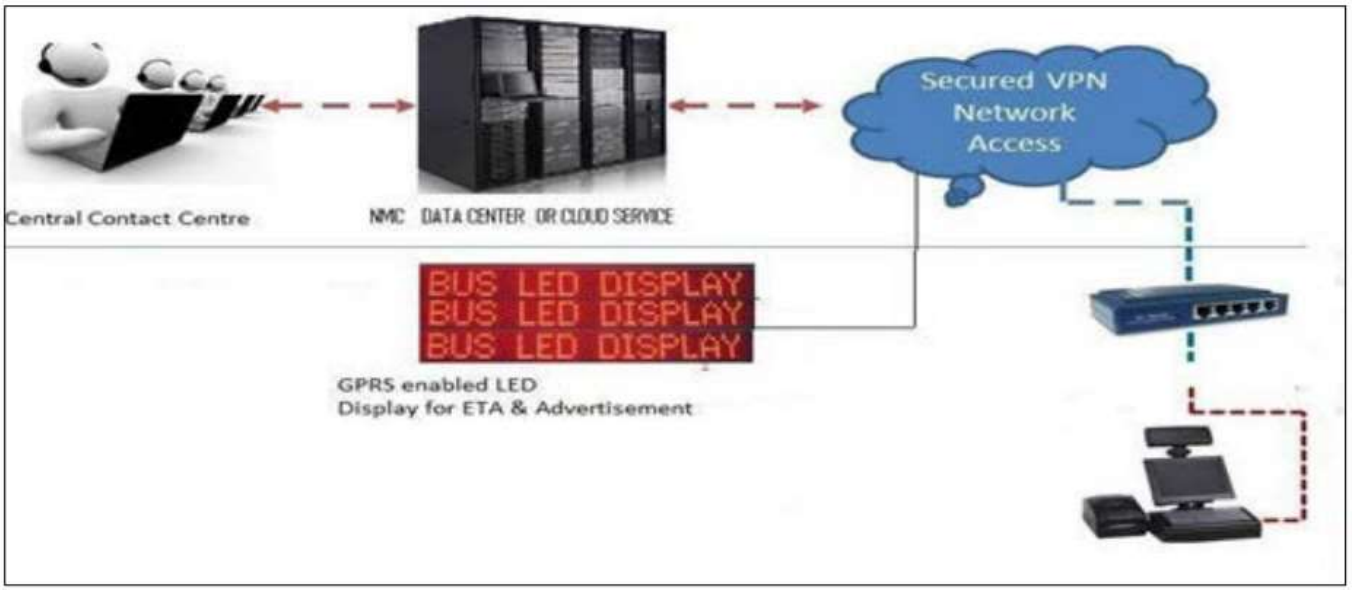
The benefits of using ITMS include:

- Making travel more efficient (safer, less polluting, economical, better informed travel)
- Helping to achieve 'Best Value' within network management as a result of greater information gathering and improved decision making
- Simplifying public transport use by providing accurate real time information about services
- Reducing the number of accidents by providing drivers with more information about conditions on the roads they are using and real-time feedback based on driving monitoring system
- Improving the security of public transport passengers and staff by providing extra communications
- Providing immediate information of catastrophic incidents and prompting for immediate response (Accidents, Ticket-less Travel, Law & Order incidents etc.).
- Two-way communication between control room and crew
- Visual display of inside of a bus/Bus Station for control room/controllers/decision makers
- ITMS solution shall comprise of following distinct application areas:
- Bus based Fleet Monitoring System
- Automatic Fare Collection System
- Passenger Information System (In Bus and Bus Station)
- Vehicle Scheduling and Dispatch System
- Incident Management System
- Depot Management System
- Central Control Centre/Central Monitoring
- Response/Call Centre Management System
- Business Intelligence System
- Financial Management System
- Web Portal
- Mobile Application (Android and iOS)
- Camera Based Surveillance System (In Bus and CCC)
- Data Centre and Networking

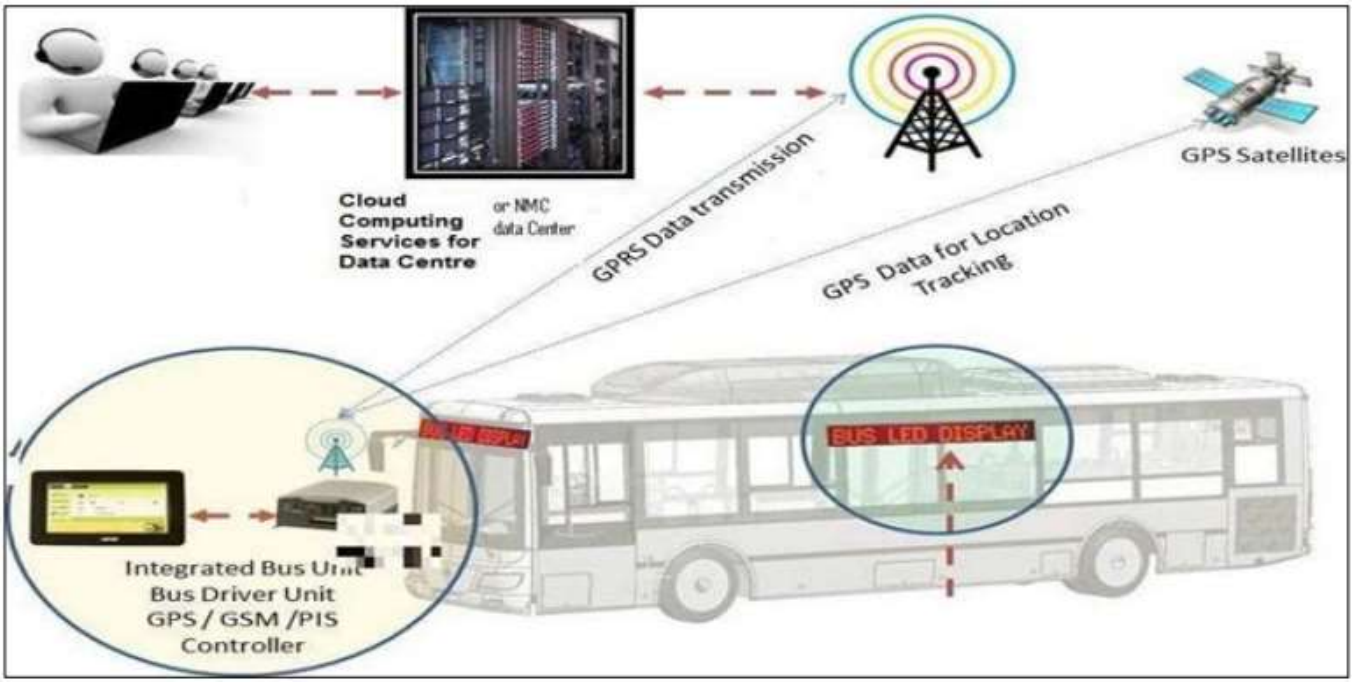
System Requirements

This section provides specifications and requirement for sub system of the Intelligent Transport Management System.

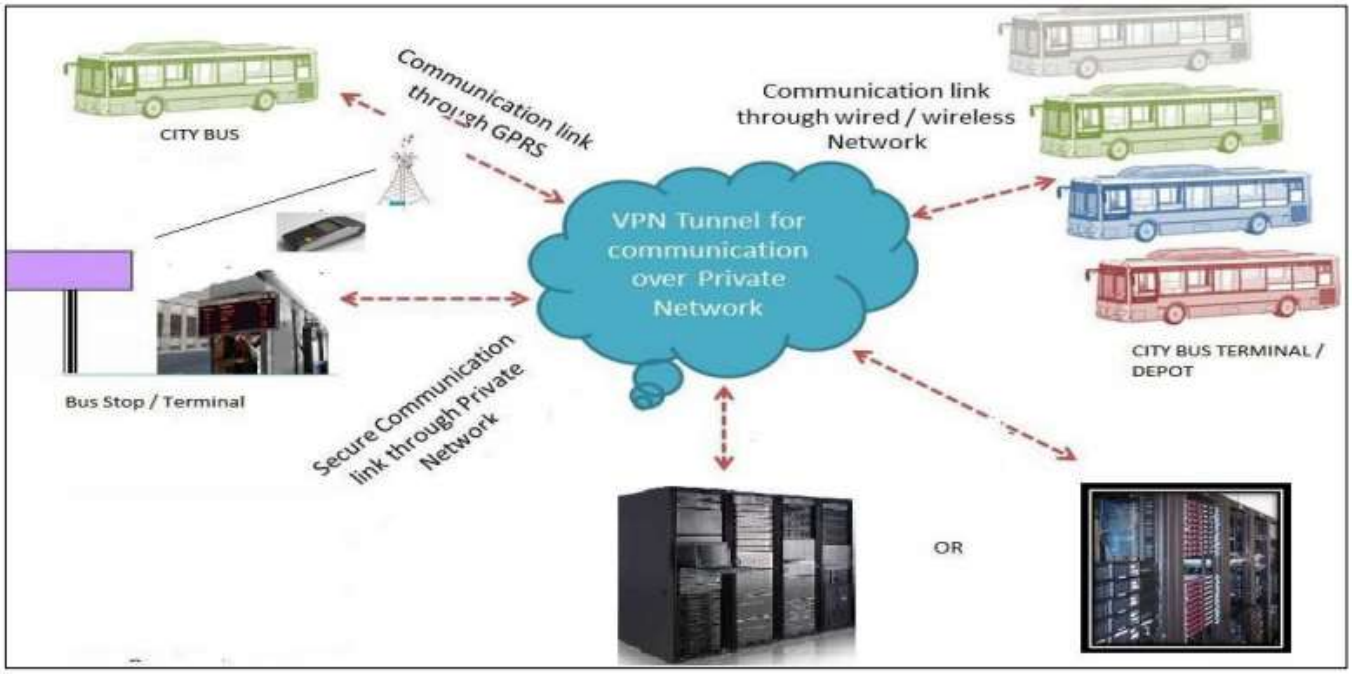
4.1.1.1. Bus Terminal ITMS Overview



4.1.1.2. BUS ITMS Infrastructure Overview - (Cloud Computing)

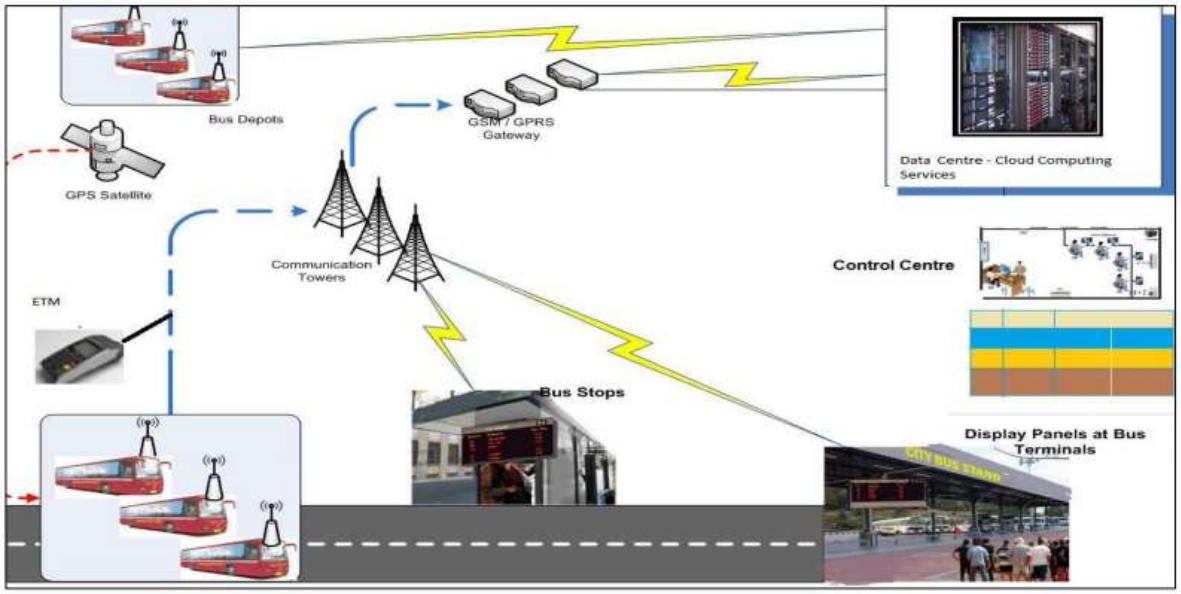


4.1.1.3. Communication Overview



Functional Specification of ITMS

This following section describes functional specification of different component to be used for ITMS implementation for CRUT. The figure below provides conceptual view of the ITMS to be deployed for CRUT, Bhubaneswar.



CRUT desires to deploy a global approach for implementing ITMS solution for all its operations spread across its depots into single IT system. The solution so envisaged would be desired in the format so that any additional depots could be connected easily without major efforts.

Technical Architecture and Requirement

ITMS Solution Features

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

4.1.1.4. 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.
- ✓ Work Flow based application

4.1.1.5. 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.

5. Proposed Solution

Proposed Features of ITMS Solution

The proposed features of ITMS Solution for CRUT are listed below:

- ✓ Single Integrated, Centralized Solution: The ITMS solution shall have all the core functions as natively integrated applications on a single interoperable open platform and not the integration of multiple products in an overlapping middle ware. The integrated solution should have the necessary Bolt-on applications as required by CRUT, with minimal customizations. The approach shall be centralized with all available information being always current and accessible to all stakeholders (single source of truth).
- ✓ Cloud hosted Solution: The bidder shall work with a Cloud Service Provider (CSP) to host the ITMS solution on a highly secure Public Cloud environment which would be accessible to concerned stakeholders via Internet. The Cloud hosted model should be a subscription model such that CRUT shall only pay for the services and resources (network, compute, storage) utilized for seamless functioning of its ITMS solution. The bidder should ensure that the CSP provides CRUT access to detailed dashboard for services and resources utilized in real-time for its ITMS solution.
- ✓ Dynamic Scalability – One of the key requirements of the proposed cloud-hosted ITMS solution is its dynamic scalability. This scalability should be both in terms of functionality and capacity (no. of transactions, no. of users, compute, storage, etc.) without impacting the performance of the overall system. In this context, it is required that the application and deployment architecture should be modular in nature and shall provide for Scale-Up and Scale-out on the various functionalities and components of the solution.
- ✓ Single-Sign On – The solution shall enable single-sign-on so that any user once authenticated and authorized by system is not required to be re-authorized for completing any of the functions in the same session. For the employees of CRUT, the web-based application, through single-sign-on mechanism, will provide access to specific or all applications depending on their roles and responsibilities. Similarly, for external users, based on their profile and registration, the system shall enable single- sign on facility to apply for required information, checking details or status of applications/ projects, submit applications, make payments, submit queries/ complaints etc.
- ✓ Support for PKI based Authentication and Authorization – The solution shall support PKI based Authentication and Authorization, in accordance with IT Act 2000, using the Digital Certificates issued by the Registration Authorities (RA) that are approved by the CRUT. In particular, PKI based authentication and authorization shall be implemented by the selected vendor for officials / employees involved in processing key G2B and G2C services, including issuance of notices, receipts and approvals.
- ✓ Accessibility - The ITMS solutions shall be accessible through mobile and other handheld devices like I-pad. Tablets etc. and the pages shall adjust suitably as per the devices and be responsive. There are certain functions within the department that may require access to the system through multiple channels like Tablets, PDA, Smart Phone, etc. The bidder shall design a solution that shall enable such access through devices with ease and is user friendly. Some but not exhaustive functions through the above mentioned devices are: Approve, View, Upload, Download, Reject, Add, Delete, Cancel, Edit, etc. This should confirm to W3C, WCAG and Mobile

Framework Guidelines of Government of India.

- ✓ Integration with Third Party software - The bidder shall integrate the ITMS application with any third party application as and when required as a part of this RFP. Further, the bidder shall provide complete documentation and handholding support during exit management to the incoming vendor to help them understand the integration interfaces and the existing integration already done. The following integration related guidelines shall be followed while designing and developing the ITMS Application:
- ✓ Use of open or industry standard based message exchange protocols to ensure interoperability between participating systems
- ✓ As much as possible, use of portable data and exchange protocols like XML and Web Service, etc.
- ✓ Ensure guaranteed delivery of messages by capturing the acknowledgment or confirmation of delivery and receipt of messages
- ✓ Ensure integrity of data-in-transit through public network
- ✓ Proper error handling mechanism and message resend capability
- ✓ Ability to view failed messages and reason for their failure
- ✓ Ensure proper Auditability and accountability of exchange of data between CRUT and other systems
- ✓ Aadhaar/ UID Integration – All the Citizen Centric Services should be integrated with Aadhaar.
- ✓ Payment Gateway, SMS Gateway and e-Mail Integrations with all required modules
- ✓ All the modules shall be available with web-based, interactive user interface. Bidder must implement the above mentioned ITMS functional modules as per the identified business needs of CRUT. In addition, the functions will be supplemented by appropriate Workflow Management and Enterprise Portal support with interface for employees, suppliers and citizens with adequate access control and security measures such as OTP, Digital Signatures, Aadhaar Authentication.

The scope of the solution can be devided into two broad categories as Package-1 & Package-2.

Package-1:

1- Automatic Vehicle Locating System
2- Automatic Fare Collection System
3- Mobile Application
4- Passenger Information System
5- Command & Control Centre
6- Depot Management System

Package-2:

1- Sureveillance System (Depot & In Bus CCTV Surveillance)
2- Incident Management System
3- Web Portal
4- Management Information System
5- Finance Management System
6- Business Intelligence & Reporting System

Automatic Vehicle Locating System

The Automated Vehicle Locating System (AVLS) shall primarily use GPS devices mounted on the vehicle as primary source of data for tracking purposes. The AVLS shall also facilitate Central Control Centre (CCC) as a source of information for real time on field operations and equip them with the details log for drill down of the critical events. The AVLS shall essentially comprise of following components:

- GPS Tracking Device
- Bus Mounted GPS based driver console (Available on the buses)
- Driver Display Unit (Available on the buses)
- Controller (For controlling on bus equipment already available on the buses)
- AVLS software & Integration with existing hardware

The AVLS system shall enable 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, Customer portal and mobile information delivery system.

AVLS Specifications

- Web based software with high resolution GIS Map for showing real time information of vehicles(both buses & e-rickshaws) should be provided.
- System should be capable to give comparative connectivity analysis between any two preferred geographical areas in graphical and tabular manner
- System should be capable to configure user accessibility, organization and operational structure based on client's existing structure.
- AVLS system should have capability to define and track trips using user defined templates.
- AVLS system should be capable to automatically identify and notify major and minor route violations as per authority's definition.
- AVLS system should be smart to automatically force close the trips either in the cases where in GPS Device is in coverage area showing abnormalities in terms of schedules time and distances or in case GPS Device is outside coverage area. Such alerts/events/reports shall be provided to the central system.
- The software shall provide customized GIS Maps along with vector Maps and line map for better decision support facility.
- The system should be capable to map and plot all fleet performance relevant incidents live on map.
- Vehicle transit history / Replay should also highlight distance travelled with over speed, low speed, all stoppages, deviated path, other vehicles of same route and their current location, GPS data loss zones etc.
- System shall have dedicated dashboard where user shall be able to analyse every scheduled trip, its adherence and other performance relevant information and regularity in single window.
- The software shall provide map-based tracking and transit route line based tracking of vehicles for control centre operators.
- The software shall have enterprise capabilities which enables multiple user type to carry out various functions like Alarm Management, Vehicle Schedule Tracking, Speed Management, Stoppage management, Route replays, bus tracking dashboard etc. as a standard functionality.
- The software shall enable Authority to drill and analyse information and online data in a multi-dimensional manner.
- Comprehensive analysis and reporting capabilities are expected to be part of the application

delivery which matches the world standard capabilities of AVLS systems.

- The system should store the running time whenever a vehicle transits between two waypoints, system should have the ability to accumulate and constantly refines a database of travel times that have occurred to accurately predict the ETA.
- Ability to measure vehicle's actual movements against these predicted values to determine how late or early a vehicle is running against the historical averages. These predictions should be disseminated to PIS and other stakeholders.
- The system should interface with data sources such as the schedule and planning tool to obtain operational route and timetable data. The system should also support a standard web-service interface for third party consumers of real-time public transport information.
- Solution should have On-vehicle hardware and software that provides AVL tracking and integration with on-vehicle equipment including next stop displays and audio systems.
- The system should have track routes being running, where the stops are located, the timetables for these routes at these stops, all must be current and accurate.
- System should have functionality to load each vehicle with the complete schedule for a shift when the operator dispatches the vehicle.
- The system should store the running time whenever a vehicle transits between two waypoints. The system should also have the ability to accumulate and constantly refines a database of travel times that have occurred to accurately predict the ETA.
- The system should obtain crew and vehicle allocations through the schedule and planning system.
- The software should have capability to have a multi-screen-based tracking system, so as to enable tracking staff to quickly analyse activities and have a better insight into operational data of all activities within the system.
- Proposed AVL solution should have the capability to track buses in real time and predict ETA at stops and disseminate this information to PIS and on board PIS systems.
- Ability to define geo-fencing for different locations like parking, depots, stations, authorized stoppage points, etc with Entry & Exit both being of different radius.
- System should notify the operator of the communication error in case vehicle is untracked.
- System should have facility to reproduce the path taken by vehicle with different colour according to vehicle status.
- Solution should have functionality to change the speed of reproduced path while displaying it on GIS map for better analysis.
- System should be able to display overall fleet status with colour legend in graphical manner.
- Overall performance analysis based upon operational regularity should be displayed.
- System should be capable of showing adherence to defined schedule on line diagram of all previous and present trips.
- System should have ability to show fleet and trip status overview in graphical manner.
- System should have facility to monitor live station details with self-regulating in-time and out-time of vehicle.
- System should have functionality to check unassigned vehicle and crew assignment details at any time.
- Solution should be able to configure incidents with its severity, level as well as authority responsible for handling those incidents.
- System should be capable of defining route boundary over GIS map and displaying it in software.
- Solution should be capable of showing all stoppage locations with its details given any stoppage

time.

- All unauthorized stoppage should be measured and monitored through the system.
- System should have multi selection functionality for tracking multiple trips information at a same time.
- Solution should have event management module for configuring special occasions.
- Solution should be able to depict tabular and graphical representation of trips and fleets statistics.
- System should be easily configurable based upon user rights and user roles for different modules.
- Solution should cover all aspects for routes, schedules and vehicles based on user role such as,
- All stop details (name, location, number, type with functionality to add/edit/delete)
- All route details (boundary, order, stops with functionality to add/edit/delete)
- All passenger information details (final & mid-point destination name numbering with functionality of add/edit/delete)
- All vehicle details (with add/edit/delete)
- All crew details (with functionality of add/edit/delete)
- All schedule details (with add/edit/delete)
- System GUI should provide the ability to perform assignments of crews and vehicles
- System should have ability to automatically import Routes and timetables and validate against existing route and timetable data within the system and are tested for any timing or route changes.
- System should automatically detect the route deviated by vehicle from its predefined one.
- Solution should be able to show trip with different color legend based upon its operational status.
- Solution should be deprived of showing live vehicles, stops and lines on map.
- Solution should have functionality to display stops, vehicles, lines on straight line diagram.
- System should be able to generate reports such as,
  - Performance report
  - Exception report
  - Monitoring report
  - Validating report
  - Summary report
- Solution should able to display information of vehicle, crew and trip on mouse over.
- System should show detailed control information of vehicle with detailed stop control.
- Solution should have multi-map view and ability of zone creation.
- System should have panic button message management and management of detours.
- System should able to integrate existing hardware(on bus components) & all third party software

Automatic Fare Collection System

The functional specifications section provides specification for major components for AFCS:

- Automatic Fare Collection System
- Fare Collection Devices & Integration with existing devices
- Integration with Incident Management
- Integration with Business Intelligence

- Integration with existing Hardware & AFC system

The core objective of implementing AFCS is to create an integrated fare collection mechanism using interoperable standards, hence the devices and media thereby has to be complementary in nature. The end state requirement of this implementation shall be that of integrated fare management and collection regime which will render its services to all types of transit system operated within the city in a unified manner.

In-order to meet diverse need of commuter and application, following media types shall be offered to users for payment of fare purposes:

- Contactless Smartcards
- QR code-based Paper Tickets
- Mobile application-based ticketing using QR code
- Booking through web portal

These AFCS fare media shall be made available to user at several locations such as Terminals within the city, designated branches, Web application, Mobile application, etc.

AFC Devices

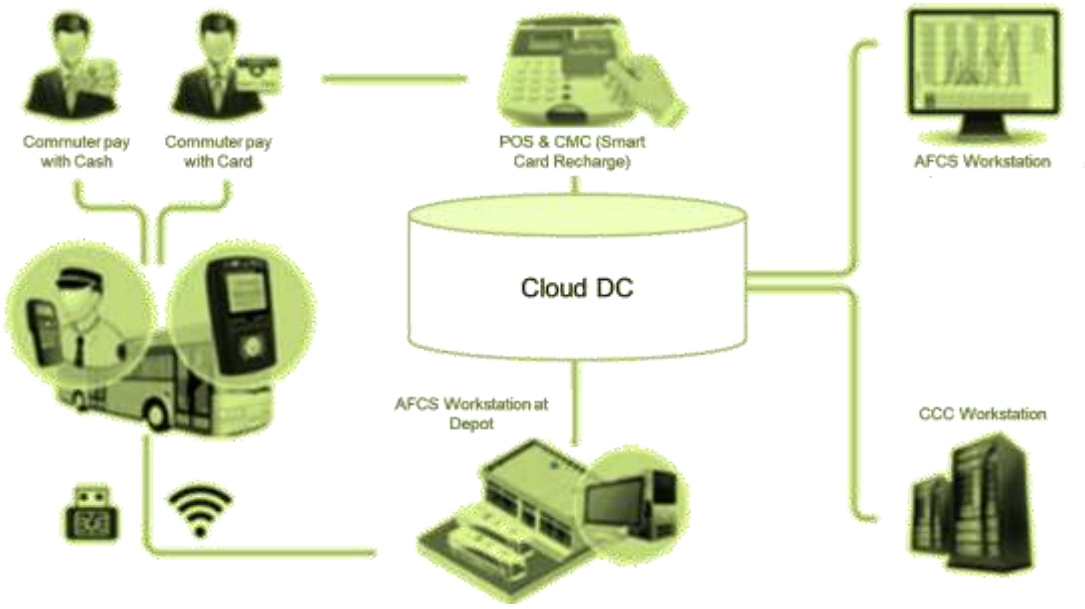
The station ticketing facility shall facilitate the commuter travel by providing an ecosystem for issuance and acceptance of fare media. The station ticketing facilities shall consist of the following:

- Point of Sale: The POS shall offer functionality to conduct the activities like issuing smart card, QR/Barcode code-based paper tickets, topping up of the smart cards and handle customer queries related to ticketing. POS shall have ability of ticket issuing / cancelling / refunding / adjusting etc. POS should be able to read and write from all the fare media as defined in the business rules.
- Handheld Ticket Terminal (HTT): Hand held electronic ticketing terminals shall be deployed for checking/ validating the fare media with the commuters and shall be used by station AFC staff for issuing Barcode/QR code-based paper tickets. This equipment is a portable hand-held device to facilitate the ticket checking capability as well.
- Mobile App for ticketing: Mobile application (Android/iOS) shall be developed to enable users to generate secure Barcode/QR based tickets for use on ticket validation devices.
- Central system of AFCS: The Central system shall consist of the AFC transaction & Configuration Application integrated with a smart card host system. The system shall be used to set configuration parameters (such as tariff tables etc.) that would be required to operate the system.
- Central Back-office system/AFC Software is the heart of entire AFC ecosystem consisting of the core components for daily operations of AFC system. The system shall be used to set configuration parameters (such as tariff, device configuration, product configuration, user configuration etc.) that would be required to operate the system. The system would host all the information required for processing the fare media within the transit ecosystem. It shall function as a Management Information System (MIS).
- Solution should include Paper based ticketing, Smartcard based ticketing, Passenger Pass management. AFCS system shall dynamically control Concession/Discount Management vs. Passenger category, Special services, pre-planned change/configuration at fare update etc., Ticket Stock Management, Dynamic configuration of Shift times etc., Hand Held Ticketing Machine allocation, Pass issuing management, etc.

Hardware Components:

- POS system for ticketing with customer display, printer, cash vault, barcode/QR Code scanner
- Handheld Ticketing Terminal (for Terminals)
- Electronic Ticketing Machines (for use within buses)
- Fare Media
- Paper based Barcode/QR Code Ticket
- Contactless Smartcard
- CRUT Mobility Card (CMC)
- Mobile based ticketing

Overall Architecture:



AFCS Specifications:

- Central BackOffice will be the heart of the AFC system where all the AFC functional activities are performed. Central Back office system should be hosted in Data Centre.
- The Central Back Office system shall generate the necessary management reports from the fare media transaction information received from various sources.
- The Central Back Office system shall hold and download the fare media parameters and fare table information to each device.
- The Central BackOffice System shall communicate with each device via the wide area network/GSM network and process the data received to provide overall audit, statistical and operational information.
- The data transferred from the devices to the BackOffice shall include, as a minimum, information such as usage of various equipment's commissioning, various transaction, EOD shift summary, Ridership numbers, shift revenue and fault reports at a minimum.
- The Central Back Office shall have facilities to generate and update blacklists for fare media.
- The Central Back Office shall be able to support applicable fare media replacement and refund

applications from devices.

- In case there is a failure in network, station devices independently record all transaction and alarm data for a period of not less than seven days and all data stored will be transmitted to the Central Back office System once the system is fully operational.
- Product Configuration Management system should be capable of adding, removing, editing and updating Fare Media for Sales and Usage at transit network.
- Product configuration should be able to configure a transit product with the following parameters such as ID, Name, Expiry date/time, Number of days in week, start and end time, service provider, Route/Stop, Device type, fare, discounted fare, profile etc.
- Product configuration Management should be able to create any number of products as per client requirements by changing the business parameters defined in business rules
- Should be able to configure fares for single journey tickets, return journey tickets, Group ticket as mentioned in business rules document
- On scheduling to devices, the update should be downloaded and updated in devices locally and status should be updated in system.
- The Transaction Management system shall acquire and process all the transactions from all fare media issued by client at acceptance infrastructure.
- Transaction Management system should acquire and process all the transactions from all the issuance channels for top-ups, update transit products, refund, renew, reissue cards etc.
- The Transaction Management shall, in future, share the details with the settlement and clearing system of the transactions
- Transaction Management should post all the transit transaction performed through batch processing for transactions performed offline.
- Should be capable of checking and handling exception, missing, duplicate, delayed and fabricated data
- System configuration should allow configuring the devices configuration parameters.
- System configuration should allow updating selected device types, groups, group of devices and individual devices.
- Should be able to select the devices and update the devices for Tariff, users, Terminal parameters, Key, Certificates and software updates.
- The Central back office system will include Equipment Management functions which shall allow client to configure new devices
- Equipment Management should allow to track the complete lifecycle of devices from Equipment commissioning to faulty replacement / removed devices
- Equipment Management system should be able to process, manage and display the alarms/alerts raised by the equipment's.
- Equipment management should allow to configure maintenance/technician users, profiles in the system.
- Equipment should allow to generate the reports on equipment's, alerts/alarms, equipment's downtime and incidents life cycle.
- The purpose of the functionality is to provide an efficient revenue management system.
- Central system shall have feature for automatic generation of daily, monthly & yearly reports for revenue reconciliation using the revenue data - transactions, audit register and cash amount. Reports shall be generated global, Route wise, operator wise and shift wise.
- The functionality shall have flexibility to take care of any manual entry errors. There shall be provision for entry correction (stating reasons) within a defined period.

- The Key Management System shall also be responsible for updating the files to all the devices in the AFC system.
- The Key Management should allow to update the system periodically and whenever required and should have the versioning mechanism to manage the updates
- Daily Sales Summary Report: Summary of all ticketing, financial transactions / cash received or refunded. Route wise, ticket wise
- Daily Ridership Summary Report: Summary of transit transaction at buses using various products
- Shift Summary Reports: All ticketing, financial transactions. Each transaction with date and time stamped.
- Aggregated / Consolidation reports for matching all Transaction based, Audit registers based and Revenue figures.
- Individual ticket transaction history
- Operator action reports
- Log reports: Chronological report of daily activities. Each event shall have date and time recorded.
- Equipment inventory: Equipment installed and removed
- System reports: System configuration reports
- Geographic area layout based GUI for monitoring and controlling
- Equipment status, Equipment mode of operation,
- Current stock status
- Configuration parameters
- Should be able to create an update and assign a version number for all updated categories
- Should be able to manage all the updates from the back office systems for all categories Tariff, parameters, Hotlist, users etc.,
- Should be able to automatically schedule updates to devices whether is an updated hotlist available
- All the status of the update should be captured in the Central computer
- Reports should be generated for all the updates schedules and status of the updates.
- All connections to the server from devices should be securely connected.
- All data exchange should be encrypted between the server and client
- All active connections should be managed by servers
- All the configuration with connections should be managed through configuration management
- Should log all credentials of the login details when logging in /off in the AFC system
- Should be securely hosted with access only to Client's user configuration managers
- Should be able to create users and profiles based on the devices and functions to be performed
- Should be able to monitor bus revenue & e-rickshaw revenue individually & combinedly
- System should be able to integrate with any other system in future
- System should be able to integrate with any transport payment tool including National Common Mobility Card in future

Passenger Information System

The Passenger Information System is an important component of integrated ITMS system and renders an important consumer facing services. Accurate and timely PIS delivery facilitates consumer trust on public transport service and also aids modal shift in long term, as the reliability and availability becomes evident to the users.

The passenger information system is an integrated service which utilizes tracking data from vehicles which is centrally processed for the purpose of arrival and departure time estimation. Central PIS system shall deliver ETA/ETD information on schedule or request basis depending on the type of end point application or device. The central PIS delivers ETA / ETD to fixed display devices installed on bus stations at a set frequency or on bus movement basis. The PIS to commuters will also be delivered via other electronic means like web portal and mobile app. This multi-channel commuter interface enables quick access to transport system and ensure citizens see the city transit system as safe and reliable alternative for travel purposes.

The system shall consist of following units to offer users access to real-time information regarding operations of bus transit service and extend ease of information access related to travel needs:

- PIS Display Screen at Bus Stops
- Display Screen on Bus (should have the capability by integrating BDC)
- Transit web portal for Bus Schedule & ETA, SMS
- Mobile App
- Integration with existing PIS software & hardware

The PIS display systems at bus stations shall display real-time information of the route and estimated time of arrival using communication system installed within the station (Wired / Wireless) with the central AVLS / PIS Application. The system will have capabilities to clearly indicate the route no of the bus on the display to assist passengers.

The Authority's web portal shall enable passengers to get information about the bus schedules on various routes operated by Authority and shall also have facility to deliver ETA based on the real-time data from central PIS system. PIS shall also be made available to users via mobile apps.

PIS Specifications:

- Display of PIS in a display unit at bus station shall be configurable based on bus station. Single unit should display services of more than one platform.
- Information Display units shall be supplied and mounted appropriately, configured and commissioned by the vendor.
- PIS information shall be displayed in Odia, Hindi and English alternatively (multiple language shall be configurable).
- At all these bus stations, display units shall receive/display transmitted contents from the central system through a gateway or mention other suitable means in the technical architecture.
- Displayed messages must be readable in high bright, day light.
- 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 configuration setting for enabling parallel display of content

on different areas of the screen – Real time Transit information (Routes, ETA, Type of service, Fare, Time/Date).

- All displays for PIS will have a configurable refresh rate with minimum of 10 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 stations. Bidder need to evaluate the requirement by visiting the BQS and consider whatever is required to do a neat installation. There should not be any wires hanging out in the BQS.
- The raw power supply shall be made available by Authority. Bidder need to provide UPS for the power distribution to various devices.
- The LED board shall be installed in such a way that it is vandal proof as far as possible.
- The station PIS display at Bus Station shall display at least 2 lines for city buses.
- The bidder should ensure integartion of on bus PIS with ITMS

Depot Management System/Solution

This module enables to automate depot operations, which include workshop management, fuel management, traffic management, vehicle management, and so on. The module shall also cover administrative activities and stores requirement.

Particular
Depot Management shall automate Depot Operations by providing Vehicle Management, Services Management, Integrated depot management and stores and inventory management
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.
Shall provide managing and adding the Crew/staff details such as employee code, role, current address, contact number, personal information.
All modules/sub modules of Depot management should be seamlessly integrated
The depot management process shall be primarily responsible to carry out the following functions: • Crew Rostering using DMS • Vehicle Scheduling using scheduling system • Vehicle Dispatch using CAD system • Vehicle maintenance and operational requirements like fuel etc. using DMS • Maintenance expenses

Particular
The operations & maintenance processes with respect to buses shall be captured by the system. The Bidder shall provide customization to the software based on the functional and technical requirements of the project.
Crew Rostering module shall be able to create group of users based on set of defined parameters by CRUT. The proposed rostering module shall plan, optimize and generate the rostering automatically for month to one year. It shall allow admin or authorized user to create and view the planning for a defined period of time. The proposed rostering application shall display or provide rostering using graphical representation for the selected period and shall interface with scheduling module to assign crews automatically to the schedule. The Rostering module shall have an interface with HR system to update crew absence, holidays, etc. In any event schedule deviations, rostering shall update crew's operation hours, ideal hours, etc., for each day to improve the operation. Rostering system shall have optimization technique to minimize and identify the underperforming crew. The proposed rostering shall provide individual or group wise performance in graphical user interface. That including working, non-working hours, holiday, leave, over time, etc.
DMS process shall provide productivity reports to ensure insights into operations such as: • Crew allocation • Schedule allocation • Crew utilization report • Fleet departure at depot • Fleet dead KM per route/ fleet wise • Revenue Kilometre • Schedule or trip cancellation • Crew license renewal history • Over time details per staff wise • Fuel stock per month/week/per day • Fuel consumption every day • Fleet wise fuel consumption • Vehicle service alerts
DMS shall also provide functionality for workshop management and following modules shall be offered: • Body repairs • Fitness Certificate Renewal • Reconditioning of assemblies and engines • Retrieving of spares • Tyre re-treading • Repairs and reconditioning

Particular
The application shall provide query by fleet to view and update the fleet status. The application shall have features to capture daily progress of particular vehicle department-wise to track progress by type of workshop activity (accident, engine rebuild, fitness certificate, etc.). All the documents related to vehicles like vehicle registration, FC, Road permit, Staff ID proof, License, purchase orders etc. shall be scanned and uploaded into corresponding sub systems like DMS, WMS, Stores, and HR & Payroll.
Application shall have features to capture and report vehicle-wise insurance claims, road permit, etc. DMS module shall have an interface with workshop module to update maintenance detail.
The following MIS reports form the tentative list. Additional reports may be added during design discussions and pilot implementation. • Breakdown • Accident • Vehicle in/out • Pending Maintenance • KMPL for each Fleet • Vehicle FC, Road permit history • Complete history of each vehicle maintenance by month and year
STORES & INVENTORY
The proposed Stores and Inventory application shall have features to generate purchase orders, maintenance contractor details, previous quotes, etc. Asset management system to maintain all the physical items belongings to this project. Application shall have receipt of incoming goods/GRN. The application shall support barcode reader to read the item information, warranty, etc. and register into application. Barcode reader should read the goods while procuring and it shall register into the system for inventory.
Barcode reader has to check the goods warranty, batch, year of manufacture, etc. by reading the barcode label on the goods. The application shall have provision to track goods transferred to other depots. Each item shall set with threshold level for stock. When the stock is going below threshold then system shall send alerts to concerned person(s) or department.
The system shall have warranty information for each item. There shall be a provision to note the physical stock location number on the application to identify the stock easily. All the items entered into system with date of manufacture, date of warranty expiry, batch, date of purchase, etc. Query screen to check warranty information of particular item shall be available. Asset will have unit make, model, part number and location of asset for both movable and immovable. Stock management shall be able to capture new and used items.

Particular
The following MIS reports form the tentative list. Additional reports might be added during design/pilot stage. • Monthly Stock detail • Item wise Stock • Item name & code with Warranty • Stores accounting value • Utilized stock • Inventory control • Maintenance of stock record • Stock transfer • Asset Detail • Asset Summary – depot wise, division wise
DEPOT PERSONNEL HR & PAYROLL
The proposed application shall store employee related master details without any limitation. The employees from Operators, Contractors, etc.as identified during the design stage.
Attendance shall be recorded using Biometric Readers installed at various places in the depots. The system shall not allow any records to be deleted. But it shall allow admin to edit employee personal info, others as required.
HR & Payroll System is expected to be accessible from all the depots, terminals, Inter-changes and main office. Additional locations shall be identified during design stage.
HR & Payroll System access shall be configurable based on location/user type/user group. The Super User or Admin shall have access to all the data. The Master table will have minimum of Date of birth, Date of Joining, Earlier Service Experience, Department, Designation, Seniority, Salary, etc.HR system shall interface with Depot Management System to provide crew absence.
The system shall maintain staff's ESI, PF and other mandatory processes. Application shall have provision to request transfer to other depots or other places. Staff shall be able to generate their salary slip using their ID & password.
Staff shall be able to check available vacation and sick leave using the system.
The following MIS reports form the tentative list. Additional reports might be added during design/pilot stage: • Employee Management • Leave Management • Service Management

Particular
• Training Management reporting • Monthly Salary management with statutory management functions like standard deduction, Payroll summary, Income tax, Form 16A and other reports as per Govt. of India • PF, ESI, Professional Tax, Labor laws etc. • Over time details and salary • Bonus statement & Insurance • Disbursals Management

Vehicle Planning, Scheduling and Dispatch Management (VPSD)

The Bidder shall conduct a detailed study of the existing IT infrastructure and data of city during the planning stage of the project and propose a migration plan into the new VPSD.

- The VPSD system should be scalable in terms of performance for future increase of users, fleet, crew, depots, etc.
- The Bidder shall provide required number of VPSD licenses for all necessary users and the entire fleet for the entire duration of the Project.
- VPSD application shall consist of:
  - Planning & Scheduling
  - Vehicle Scheduling and timetable
  - Crew Scheduling and Roster
  - Dispatch and Daily Management
  - Dispatch of Vehicles & Crew
  - Daily Management of Vehicles and Crew
- VPSD to be integrated with AVLS as per the requirements.
- VPSD related data shall be available for a minimum period of 3 years. Data of 1 year to reside in the primary storage while the remaining to be stored in secondary storage.
- Data nomenclature shall follow existing structure as per authority's requirements such as by division, depot, operation, route, schedule, bus type, employee type, employee, bus, etc.
- All terminology in the VPSD application shall be consistent with the current operational terminology used by the authority.
- Application shall have ability to have a separate database instances for testing purposes.
- All its major features shall be available through toolbar icons and all features shall be accessible with dialog boxes.
- All data shall only need to be entered once with no retyping of data necessary.
- Application shall have role based access with read and write level access.
- Flexibility in access of individual screens of the application shall be provided so that each user shall have different (no access/read/write) privileges.
- All components of VPSD shall be integrated with other ITMS subsystems so that data entry shall be done only once between the subsystems.
- The system shall be modular so that improvements in one sub system/component do not make other subsystems/components to fail.
- The Bidder shall identify steps to ensure migration to the Bidder's VPSD from the current system

with least operational challenges for the authority.

- Ability to produces printouts of crew schedules, duty rosters, route timetables, bus stop timetables etc.
- The system shall provide necessary reports, operations monitoring dashboards and MIS environment.
- The objective of network modelling is to digitalize and maintain the GIS information (stops, depots, routes, distances, etc.) and produce a statistical speed analysis to be applied during vehicle scheduling.
- The bidder shall collect the existing network databases from authority and propose a migration plan.
- The solution shall have map-based interface with the option to use Google Map as a background and being compatible with Google Transit.
- All GIS objects shall be editable in the map-based interface (stops, stations, depots, distances, paths, etc).
- The solution shall allow the user to change the path automatically based on road network (with the option to use google map) or enter distances manually.
- The solution shall provide specific features for managing and optimizing the dead run (non-commercial trip) on the map.
- The solution shall have a schematic view of the routes / network.
- The solution shall provide statistical module for analysing GPS data from AVLS in order to build a speed / travel model for the entire network.
- The speed / travel time model shall be based on type of days and hours of the day for each path / section (including dead run) of the network. The model shall be further used to produce the timetables and schedules in order to integrate the traffic conditions into the planning process.
- The objective of vehicle scheduling is to define the schedules / trips of the vehicles based on targeted frequencies depending on routes, types of day and hours of the day and traffic conditions and available resources.
- The bidder shall collect the existing timetable databases from authority and propose a migration plan.
- The proposed system to allow frequency or number of vehicle approach for producing the vehicle scheduling plan.
- For frequency approach, the user shall be able to give as a parameter the targeted frequency depending on the hour of the day for a type of day. The system will calculate the necessary number of vehicles.
- For number of vehicle approach, the user shall be able to give the maximum number of vehicles (depending on the hour of the day), the system will calculate the optimum frequency at peak hours.
- The proposed application shall display vehicle scheduling using graphical representation for the selected period (time-vehicle graph), with different color for each vehicle (stops for Y-scale and time for X-scale).
- Ability to define types of day (week days, weekends, holidays, festivals, etc.). Each type of day can have different vehicle scheduling and timetables.
- System should have ability/edit specify inbound and/or outbound timetable for a specified day type.
- Ability to add, edit and copy/duplicate timetables
- Ability to link/add trips to the selected timetable.
- The objective of crew scheduling is to optimize the crew allocation to the vehicle services. Key

indicators are number of crew, hours (driving and non-driving), extra hours, etc. The crew scheduling also helps in providing crew schedules according to personal preferences and social constraints. The proposed solution shall have automatic and manual features for building a roster grid of crew scheduling to be applied to the different types of day.

- The system shall support existing crew rules and regulations of the authority and in-turn authority shall be open to the process improvements suggested by the implementation of VPSD system and tailor their processes for the optimal solution.
- System shall have ability to create crew schedules considering different shifts parameters such as shift spreads, meal time etc.
- System shall have ability to define shift start and end points, break times, etc.
- System shall have ability to support minimizing/maximizing crew hours (driving, breaks…), extra hours, total weekly / monthly respecting the rules & regulations.
- System should be capable of creating crew schedules for Bus schedules which operate from specific depot / division and transfer crew.
- System shall support following reports but not limited to:
    - Detailed Crew report for each duty / crew day(s) of the week clearly indicating Sign On, Sign Off , Trip details that are to be performed, meal break location, etc.
    - Consolidated Crew report for all duties in a depot for day(s) of the week clearly indicating Sign On, Sign Off, On Vehicle, OFF Vehicle, Steering time and hours of duty for driver and conductors
    - Statistics reports of crew and depot.
    - Horizontal Blocks to provide duty wise details of each crew along with the Route number on which they will perform duty
- The Bidder shall provide a Crew Rostering Software with choice based duty.
- Crew Rostering module shall be able to create group of users based on set of defined parameters.
- System shall have provisions to easily make changes to the planned roster
- System shall have provision to create rosters for user definable day types such as Public Holidays, weekends etc.
- System should have provision to include non-driving work in the roster
- System should have provision to utilise drivers from other Depots
- Schedule master shall have minimum start place, end place, starting and end time of each trip, rest time in between the trips, distance between the start and end place, distance between stops, overnight stay, etc.
- The crew scheduling module shall provide following MIS reports, but are not limited to:
    - Crew Reports
    - Driving and non-driving hours
    - Depot / division reports
    - Crew Allocation alerts and reports
- The objective of the daily dispatch module is to allocate on a daily basis the vehicles and crew to the planned services, depending on maintenance planning for the vehicles and crew holidays or trainings, etc… For each operational day, a type of day shall be applied and physical resources to be allocated. The solution shall have interfaces at the depot for recording the crew operations and store the attendance information (worked and driving hours, absence, etc...).
- The proposed solution shall have a vehicle and crew master database with their attributes (type of vehicle, identification, names, etc…).
- The proposed solution shall have specific features for preparing the allocation plan for the next

days / weeks / months depending on the rules and regulations for the crew.

- The proposed solution shall allow change of allocation (vehicle / crew) during the operations at the depot level.
- The proposed solution shall record the crew operations of each day (to be further used by other systems for salary calculation or statistics…).
- The dispatch module shall provide following MIS reports, but are not limited to:
  - Vehicle and crew allocation plan for specific periods (weeks, months, year...)
  - Statistics based on vehicle (KMs, maintenance...) and crew (driving and non-driving hours, extra hours...)
  - Depot / division reports
  - Attendance reports

Depot Surveillance System

The bidder need to secure the depots with biometric attendance system & access control system to ensure the effective monitoring of depot oprations.

CCTV based surceillance system will be incorporated by the bidder at each and every depot.

The bidder must ensure the remote access of all the ITMS system from CCC.

The bidder must ensure the device level local access of the system when it'll be required.

Camera based in Bus Surveillance System

Camera to be fitted on Buses and Video images will be recorded at OBU fitted in the buses, which shall overwrite after 48 hrs. Video shall be downloaded through USB, SD card or WiFi system. Recorded video shall be viewed through special software as and when required.

Cloud Based DC & DR

DC & DR to be hosted on Cloud which will provide all the computing needs required to run all the services which includes applications, middleware for Data processing, network and pure Storage.

Bidder shall propose to host Applications and storage on cloud for complete Data Centre operations. Applications should serve users 24X7 considering near zero downtime of SLA 99.982 % with assured guarantee.

DC shall be implemented based on managed cloud services and shall adhere to guideline issued by MeitY over time to time.

Bidder may propose the Cloud Service Provider(CSP) from the empaneled vendors of Meity.

Below are the key factors to be considered for cloud hosting:

- The Bidder is required to prepare and submit along with their technical proposal, the details of methodologies and computations for sizing and capacity of storage, compute, backup, network and security. There should be logical separation (of space, servers, storage, network infrastructure and networks) to protect data, applications and servers on Private cloud.
- It is expected that bidder will make all necessary provision to ensure high availability at the Data Centre
- The system will be hosted in the site identified by the bidder and as agreed by the client
- DC & DR cloud services will be located in India only

- Ensure redundancy at each level
- Bidder shall provide interoperability support with regards to available APIs, data portability etc. for the client to utilize in case of Change of cloud service provider, migration back to in-house infrastructure, burst to a different cloud service provider for a short duration or availing backup services from a different service provider.
- The bidder is fully responsible for tech refreshes, patch management and other operations of infrastructure that is in the scope of the bidder. Strict governance from bidder towards cloud provider is mandatory requirement.
- Scalability – The DC's basic capacity planning will be based on application and storage needs of services being on boarded. The capacity will be scalable horizontally and vertically with additional computing needs for scale.
- Cloud services should be accessible via any internet connections to anywhere
- The bidder should configure, schedule and manage backups of all the data including but not limited to files, folders, images, system state, databases and enterprise applications.
- The DC cloud provider should offer dashboard to provide visibility into service via dashboard.
- CSP shall not delete any data at the end of the agreement (for a maximum of 60 days beyond the expiry of the Agreement) without the express approval of the client.
- Information Security Standards –Data Centre shall be ISO 27001 certified for security policies and procedures.
- Monitoring – There will be continuous monitoring of the critical systems including network components, hardware, storage etc. through NMS - Network Management System for administration, monitoring. NOC team will continuously monitor the uptime and report accordingly.
- Security – There will be Security procedures and protocols established secure systems. Access control mechanism and Asset management functions, will ensure device accessed is logged. Breach of access will be immediately reported for damage control. Firewalls, Antivirus, End point security systems will provide a secured environment. Encryption on data will be used where relevant. Cyber Security Requirement as issued by the GOI shall be adhered to.
- High redundant Data Recovery Centre –All critical services running on the DC shall be considered for DR.DR has to be designed for absolute redundancy. Systems should have high uptime and availability of services. Separate DR on cloud services will be planned to ensure there is no data loss under conditions of Primary Data centre going down. DR services shall be optimized in such a way that in normal operations from DC there shall be minimal resource utilization of DR computes. During disaster DR should take charge automatically with defined RTO & RPO requirement. The bidder would have to Design the DR according to RTO (1 hrs.)/RPO (15 min.) criteria and consider active/passive method.

Preparation of Disaster Recovery Operational Plan

The bidder should provide detailed operating procedures for each application during the following scenarios. These will be mutually agreed upon with client during the project kick off.

- Business as usual: the primary site (DC Cloud) is functioning as required, procedures for ensuring consistency of data availability at secondary site.
- Disaster: Declaration of disaster, making the DR site live for production, ensuring availability of users to the secondary site.
- Operations from DR site: Ensuring secondary site is addressing the functionality as desired

Technical & Functional Specifications– Empanelment of Cloud Service Provider (CSP) facilities/services shall be compliant with regulative directives and industry best practices.

The SLA shall be based on the guidelines issued by Government Departments on contractual terms related to Cloud Services (MeitY guideline). The security controls for creating and managing cloud services shall comply with the following guidelines.

The CSP (Cloud Service Provider) should be empanelled by MeitY for providing cloud services. The CSPs facilities/services shall be certified to be compliant to the MeitY standards.

The CSP/Service Provider shall comply or meet any security requirements applicable to CSPs/Service Providers published (or to be published) by MeitY or any standards body setup / recognized by Government of India from time to time and notified to the CSP/Service Providers by MeitY as a mandatory standard.

The CSP/Service Provider shall meet all the security requirements indicated in the Information Technology Act 2000.Also the Cloud Service Providers shall comply with the audit criteria defined by STQC.

The CSP should be empaneled by MeitY for providing cloud services. The CSPs facilities/services shall be certified to be compliant to the following standards: ISO 27001, ISO 27017, ISO 27018, ISO 20000-9, ISO/IEC 20000-1 & PCI DSS.

Incident Management shall be managed by CSP / third party.

Periodic secure code review shall be performed for cloud applications.

Data encryption at rest / transit depending on sensitivity of data shall be implemented using managed keys, which are to be stored securedly.

The CSP will undertake to treat information passed on to them as classified. Such Information will not be communicated / published / advertised by the CSP to any person/organization without the express permission of the Department.

CSP shall inform all security breach incidents to Smart City Management on real time.

DC and DR to be hosted in different seismic zone.

The CSP will undertake to treat information passed on to them as classified. Such Information will not be communicated / published / advertised by the CSP to any person/organization without the express permission of the Department.

E-Discovery shall be included as clause in SLA with CSP. It is the process of locating, preserving, collecting, processing, reviewing, and producing Electronically Stored Information (ESI) in the context of or criminal cases/proceedings or investigation. Logging and reporting (e.g., audit trails of all access and the ability to report on key requirements/indicators) must be ensured.

The Law Enforcement Agency as mandated under any law for the time being in force may seek access to information stored on cloud as provided by the Service Provider. The onus shall be on the CSP to perform all due diligence before releasing any such information to any such law enforcement agency.

CSP must ensure location of all data related to smart cities in India only.

Appropriate segregation of Virtual Private Cloud (VPC) security rules defined as part of firewall to restrict access, Role based access management, and Logging and monitoring shall be ensured.

VPN gateway must be setup to ensure controlled access, appropriate security rules must be employed to encrypt outward data flow, IDS, IPS, API Gateways to be setup and ELB logs to be maintained for any activities.

Web Application Firewall must be provided, Host IPS must be setup on all the Web servers, Web servers must be configured as per the CIS security hardening guidelines and baseline security requirements; logging and monitoring should be enabled.

Application access between hosted city applications shall be segregated, internal infrastructure and external traffic, Role based access must be defined, hardening of database instances as per the CIS baselines configuration guidelines in the cloud setup must be ensured, Logging and monitoring must be enabled.

For SLAs to be used to steer the behaviours of a cloud services provider, imposition of financial penalties is to be incorporated.

ICT Infrastructure and CCC

24*7*365 monitoring and management of the cloud services of the DC/DR from CCC

Bidder shall ensure proper configuration of system parameters and performance tuning on regular basis.

Bidder shall ensure no single point of failure while accessing data from cloud

Ensure accountability for all hardware maintenance and support the ICT infrastructure at CCC

Bidder shall be responsible for operating system administration, including but not limited to management of users, processes, preventive maintenance and management of upgrades including updates, upgrades and patches to ensure that the system is properly updated.

Bidder shall also be responsible for installation and re-installation of the hardware(s) as well as the software(s) in the event of system crash/failures.

Entire security of installed hardware to be controlled to ensure smooth operation of CCC.

CCC building should be secure with CCTV surveillance along with Access Control System.

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.

Emergency/Incident Management shall be handled through the AVLS or through some Command & Control Platform. In general, the strategies for emergency/incident management will be developed at a broader organizational level, and shall involve many stakeholders including the AVL system. The incident management process shall include:

- Detection

- Verification
- Motorist Information
- Response
- Site Management / Action
- Traffic Management
- Clearance

This system should execute following phases:

- Notification phase
- Response phase
- Recovery phase
- Restoration phase

Incident management system is envisaged to be implemented as part of emergency response and alert/event management which shall facilitate communication of activities internally and externally as well.

Requirements:

- Incident Handling Module
- System should be able to facilitate user to define Incident Definition during System configuration. And allow user to redefine it as per the need at any later stage. All incident reports should reflect such user driven Incident definition from the immediate effect.
- System should have dedicated Incident handling dashboard to View, Analyse and Handle incidents easily.
- System should have analytical graphical dashboard to evaluate live and historical incidents (such as Route performance analysis, transporter performance analysis) for pattern analysis and better decision making
- System should be able to automatically identify Incident severity and exact location of incident along with all previous incidents of same route or trip
- Incident handling mechanism should enable control centre staff member to manage incidents based on Priority & severity or escalate it if needed based on user authorization assigned.
- System should be able to auto prepare driver score card based on incident reported
- System should be capable enough to auto close incidents based on predefined system configuration
- System should be able to prompt all incident alerts.
- System should be able to support at least following incidents but actual incident list to be finalized with the authority and bidder to propose an exhaustive list covering all possible incidents which may be thought of. The system should be flexible enough to include incidents as and when experienced.
    - Vehicle running with Over Speed
    - Vehicle Running with Minimum Speed
    - Vehicle attempting Route Deviation
    - Vehicle having Unidentified Stoppage
    - Vehicle having Missed Stoppage
    - Vehicle having Miss out Trip
    - Vehicle having Early Trip Start
    - Vehicle having Delayed Trip Start
    - Vehicles in state of Bunching / Bundling / Headway

- Passenger Overload
- Organizational Level/Depot/Terminal wise Operational Regularity
- Vehicle in Breakdown
- Vehicle in Accident / Panic Situation
- Equipment Performance
- GPS/BDC Device not connected
- Low Battery
- Shelter PIS Out of order
- On board PIS Out of order
- Incidents Recorded by External Entities Damaged Lane
- Blocked Road due to Road Side Accident
- Blocked Road due to Road Side Working Progress
- Excess Passenger Flow due to Event/Festival

The bidder may also provide leading readymade solutions along with all perpetual licenses.

Web Portal

Service provider / bidder shall have to develop web pages which shall allow user to view and download route information, route schedule and real-time ETA.

Web Portal shall allow user to plan their journey based on source and destination preferred.

The portal will act as a single source of information with regards to transportation system in Authority's city and hence shall have all possible interfaces like logging complaints, viewing transport information, real-time updates, organizational structure, citizen blogs etc.

Mobile Application

#	Mobile App Features
Ease of Finding Bus stop / Bus / route / schedule etc.	
1	System should show Current Location of user with nearby Bus stop on Map along with the distance & time to travel.
2	User should be able to search for nearby station, where the user can get the bus for the route selected by him/her or the Source & destination pair.
3	Show routes and the details of bus reaching in next 15/30 min for the selected bus station.
4	Should be able to search all the routes connecting the source and destination provided by them, along with upcoming bus details in those routes.
5	Should be able to view all the schedule time for a selected route and between the selected bus stations.
6	Should be able to provide details of Bus location, last stop crossed, last stop time along with ETA of the particular bus.
7	Should be able to see the real time expected travel time between his selected source and destination or at the station.
Ease Of travelling	

#	Mobile App Features
8	Should be able to mark favourite for a route or for a particular bus stop. Favourites should be displayed in the front for easy access to know upcoming Busses in the favourite route and their ETA/ETD etc.
Ease of Ticket Booking	
10	Should be able see the fare between two stations with relevant details like distance, routes connecting two stops etc.
11	Should be able to book tickets for travel. The e- ticket/ SMS etc. should able to be verified by ticket collector inside the Bus though the Hand-held Machine.
13	Should have a provision to pay for ticket directly through mobile application.
Ease of Management	
14	Should be able to give feedback to authority with photograph of problem/ suggestion.
15	Should be able generate desired reports as per the Operation team & CRUT Management.
Others	
16	Should be available in Android and iOS Only.
17	Should have an Emergency panic button which can be used by user to send exact location of Bus to all relevant persons during emergency.
18	Should have a provision to host various promotion & brand displays

MIS

Management Information System is a single window dashboard for higher management and key decision maker. 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.

System should offer at least following features under MIS module:

- Ability to capture Operational Performance KPI events as and when they occur
- Ability to analyse Trips v/s KMs v/s Passengers v/s Expenditure
- Ability to analyse Route Performance
- Ability to analyse Exceptions/Events/Incidents
- Ability to capture Fleet & Crew performance and prepare Driver performance scorecard
- Ability to capture depot performance
- Ability to capture incidents and trigger the training requirements for the crew
- Ability to define level of detail from minor to complex as per company or regulatory requirements
- MIS Reporting is used to perform day to day monitoring of the ticketing operations and be responsible for generation of MIS reports.
- The Back Office generates reports automatically at end of day. The Back office collate, format

and enable end of day and ad-hoc reports to be printed from the data transmitted by the AFC Devices. Data will be stored in a relational data base structure to permit ad-hoc and detailed log reporting.

- MIS reporting should be capable of extracting reports from the day of operations
- Details of the parameters of report will be finalized during the design phase.
- Below are the minimum number of reports required and all the reports will be finalized during the design phase.

Financial Management System

The Financial Management System shall be standard corporate financial management system including P/L and Balance sheet management.

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

The financial management system should also manage fare or any other financial transactions with companies offering services. It is envisaged to offer single ticket to passengers to travel across all urban transport systems 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 in its own right and shall be separate from a third party corporate accounting system.

a) Central Accounting System

The central Accounting system shall consist of 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.

• Gross Cost Contract (GCC) Module

b) Receipts Accounting Module (RAM)

The receipt of funds shall be a centralized/de-centralized activity and shall be managed by central financial management system. The receipts from the transportation and allied activities 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)

c) 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 as from the other operational centres.

The payees shall be able to put up their requests by means of 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: -

•Payment Memo Approval

• Payment

• Daily-sheet preparation/posting

• Posting in Bills/Budget Ledgers

• Consolidation into Classified Register

• Trial Balance Preparation

d) Daily Receipts and Payments Cross-tally

Central accounting system shall provide facility for item-wise receipts and payment statements (Daily-Sheets) under RAM and PAM every day. These shall be prepared on the basis of paid vouchers and receipt challans, while bank- book (Journal) and cash-book (Journal) shall be written as and when challans are received along with cash or cheques or voucher is paid in cash or by cheque.

In order 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.

Business Intelligence Platform

BI Dashboard is a modern concept that aims to leverage a number of modern technologies to aid dynamic MIS report and updates of ITMS. CRUT would like to be able to get better and dynamic MIS reports and updates of each department which helps to get better and faster decisions. CRUT would also 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 cost.

As part of the BI Dashboard infrastructure, it provides centralized BI Dashboards for key dignitaries 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 others 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.

BI module should facilitate at least the following features:

- The purpose of Pervasive Business Intelligence Layer is to augment the native BI capabilities of applications hosted on the data centre. Almost every business application hosted on data centre 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 centre 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.
- 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 definitely 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.
- 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.
- 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.
- It should have facility to save the queries and edit the same in future to derive newer queries
- It should have facility to create ad hoc queries through the use of simple business terms for querying the data sources
- 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.)
- It should have facility to create ad hoc queries through use of simple business terms for querying the data sources
- 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.
- 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.

- 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.
- 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.
- 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.
- Ability to export the data or report to spread sheets including graphics and to flat file.
- There should be a facility for an end user to select a few of the reports and mark them as "favourites"
- Ability to export the reports into CSV, pdf & xls html formats
- Ability to directly send the report for printing on a LAN printer / personal printer
- 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.
- Should integrate with an existing enterprise portal mechanism
- Should allow end users to create their own dash boards via a simple drag and drop mechanism
- Should allow the entire dashboard to be printed as a report
- 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.
- Should provide dashboard facility with visual features like Metric Dials, Graphs, etc. for display and track of metrics
- Solution shall automatically detect and suggest hierarchical structures in data sets
- Map physical data structures to business terms in an easy-to-use interface
- Define consistent business views of the data for relational tables and OLAP cubes
- Single meta data layer should be used by all the various BI features
- The same modelling 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.
- 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
- 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.
- Alternate drill down paths should be supported. These should be created at the metadata modelling Solution.
- 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.
- Allow query and refresh of embed data within native MS applications

- OLAP Analysis Capability: Ability to do ROLAP, MOLAP and HOLAP analysis, depending on the requirement, needs to be catered to by the Solution.
- Maintain and monitor status of data cubes being built by users
- Drill-across dimensions for selected records 1.51 Slice and Dice of data sets
- Sorting
- Filtering
- 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
- Asymmetric analysis and multi-grain analysis of multi-dimensional data should be supported
- Facility to perform query and analysis on the user defined cubes but not restricting query and analysis to the data cubes created by application 1.48 Trends across dimensions over time evident in the fact records 1.49 Drill-down across hierarchy of levels within a target dimension
- Drill-across dimensions for selected records 1.51 Slice and Dice of data sets
- Score carding capability: the application needs to have the ability to build and display scorecards
- Application shall provide facility to create and maintain organization hierarchy with various organization roles defined
- Provide metrics and scorecard facility at a team, function and enterprise level
- Provide dashboard facility with visual features like Metric Dials, Graphs, etc. for display and track of metrics
- The Solution should allow you to view and edit the cause and effect relationships for each metric
- The Solution should have integration with the reporting section. A report should be easily added or linked to / from a metric.
- All Analytical Solutions provided in this layer (described as capabilities above) must share acommon service oriented architecture, common data access services, commonanalytical and calculation infrastructure, common metadata management service, common Symantec business model, common security model and common administration solutions
- The BI platform must enable the data centre to 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.
- 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.
- 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.
- The BI platform should provide 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 datacentre, BI platform must provide support for capabilities such as trickle feed ETL, Business Activity Monitoring, Federated data access directly from OLTP systems
- The BI platform must be hot 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
- 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.

- Solution should be installed in minimum Redhat Linux, Windows 2000, Windows 2003 server, Windows XP, IBM and HP flavours of Unix
- 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.
- Internal temporary files created on the server side should also be encrypted and secure
- Reports can be scheduled on the basis of occurrence of a business event / business threshold being breached.
- Mobile support should be enabled. Should cater to leading technologies such as Blackberry, Symbian as well as Windows Mobile.
- 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
- Integration : Integrated with CRUT applications & Other ITMS 3rd Party 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
- CRUT should be able to analyse all passenger data with diffirent data filters with different level of authorization following the MEITY guidelines.
- The bidder may also provide leading readymade solutions along with all perpetual licenses.

6. Project Deliverables

Project Timelines

Stage	Description	Timeline
Phase 1: Implementation		
1	Acceptance of Order and Signing of contract	T1
2	Project Plan	T1+2 weeks
3	System study and documentation	T1+4 weeks
4	Deployment of Package-1 Modules • Automatic Vehicle Locating System • Automatic Fare Collection System • Mobile Application	T1+12 weeks
5	Deployment of Package-1 Modules • Passenger Information System • Command & Control Centre • Depot Management System	T1+18 weeks
6	Deployment of Package-2 Modules • Sureveillance System (Depot & In Bus CCTV Surveillance) • Incident Management System • Web Portal • Management Information System • Finance Management System • Business Intelligence & Reporting System	T1+24 weeks
7	Control Room Setup	T1+20 weeks
8	Integration with existing ITMS & Other third-party solutions	T1+24 weeks
Phase 2: Implementation		
Full roll-out/Go Live	Go-live of entire application including planning, scheduling, transit, depot and workshop management, etc. as per RFP	T1 + 24 weeks
Stabilization	6 months of stabilization	6 months from full roll-out
Phase 3: Operations & Maintenance for a period of 5 years after completion of Phase 2		
Kick-off of exit management	Kick-off exit management plan	1 year before end of contract period
End of contract period	Contract closure	End of 5 years from Operations and maintenance
Note: The SI/Bidder need to develop & design project plan intact with the defined timeline with appropriate project management tool. Route wise bus details will be provided to bidder after issuance of LOA. Bidder need to prepare and submit the all requirements desired from CRUT at the		

time of project plan submission. Bidder need to ensure that there should not be any delay for information gathering or data collection.
Project Timelines-The total term of the Successful Bidder agreement shall be 5 years from Go-Live, which can be renewed or further extended to 2 years based on mutual agreement

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 CRUT. Though CRUT 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 CRUT 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 CRUT.

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

- ✓ Define all the specifications as per CRUT'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.

Integration with existing ITMS

The bidder needs to study the existing ITMS of CRUT and make sure the integration of all existing hardware & all third-party software. The bidder should ensure the inclusion of all tasks & sub tasks for integration of ITMS. Integration failure would lead to penalty. The existing hardware specifications are provided in annexure.

1. Integration with AFCS system
2. Integration of web portal with social media & news center
3. Integration of On Bus Components
4. Integrations of all existing third-party software/applications
5. Integration of Google Services (like Bus ETA/Bus Routes/E-Rickshaw ETA)

The bidder/s need to ensure that system should be capable of integrating forthcoming third-party software.

Testing of ITMS Solution

The Bidder shall design the Testing strategy in line with the including Requirement Traceability Matrix, FRS, SRS, and Test Cases and conduct testing of various components of the ITMS configured/ customized for CRUT. 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 CRUT 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 CRUT is required to provide formal approval for the test plan, it is the ultimate responsibility of the Bidder to ensure that the end product delivered meets all the requirements of the ITMS implementation specified by CRUT 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 CRUT on the testing approach and plan.
- ✓ The Bidder shall demonstrate to CRUT 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 CRUT.
- ✓ 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 CRUT 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 CRUT

Quality Review and Security Audit

- ✓ CRUT shall form a team for conducting the Quality Review of the implementation of the proposed solution. This team will consist of
  - Nominated employees of CRUT
  - Project management consultant
  - Representative of ITMS OEM/s (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 detail 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 MSI 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 CRUT and Security agency to show the compliance.

Project and Product Documentation

The Bidder will be responsible to provide all detailed documentation mentioned in this RFP to CRUT. 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 to facilitate self-education for CRUT 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 ITMS 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 modules.
- ✓ 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.

Cloud hosting and Integration

It is the responsibility of the Bidder to provide on Cloud services such as computer, 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 CRUT shall be licensed to CRUT and will be the property of CRUT. The licenses shall be

perpetual.

- ✓ All the data created/captured under this project shall also be the property of the CRUT.

Hosting at data Center and Disaster Recovery Centre of Secured Public Cloud

- ✓ The proposed solution is to be hosted on Public Cloud Infrastructure. The Bidder is responsible for hosting of this solution and all correspondences with the Cloud Infrastructure Service Provider.
- ✓ The Lead Bidder/ Consortium can sub-contract the hosting activities. However, it is clarified that the Lead Bidder shall be the principal employer for all claims arising from the liabilities statutory or otherwise, concerning the sub-contractors. The Implementation Agency undertakes to indemnify the Nodal Agency or its nominated agencies from any claims on the grounds stated hereinabove.
- ✓ The bidder shall share all the details of the Cloud Service Provider in the Technical Bid. Both during the process of award, and post award of contract, if there is a change in sub- contractors, the Bidder shall obtain prior permission from CRUT.
- ✓ The bidder needs to ensure that appropriate sizing is done for storage and maintenance of the application for use to all users for the duration of the contract. Due to dynamic data sizes, the storage needs to be scalable with a provision to add disk space on the fly.
- ✓ The bidder should ensure that the proposed cloud solution should have self-service portal to provide services to admin/users such as Create VM, Start, Stop VM, and Console/Root. Access to VM, Monitor the VM, Admin panel to manage complete cloud services, Facility to monitor resource utilization, preferably at interval of every 5 min., Provision to create VM templates with standard applications.
- ✓ The Bidder shall provide the bandwidth needed to meet the solution requirement in sizing consideration. Depending on the bandwidth usage the bidder needs to provide monthly usage details and CRUT can decide upon increase or decrease of bandwidth requirements. Bandwidth provided should be redundant at every level.
- ✓ All software licenses should be perpetual and should be procured on the name of CRUT. All software updates and patches should be done by the bidder.
- ✓ The Bidder shall provide all the utilization reports as generated by the Cloud Service Provider for billing purpose. The payment to the bidder would be done at actuals on quarterly basis.
- ✓ In the event of discontinuation of the services of the Cloud Service Provider, either during or after the Maintenance Period, the existing Cloud Service Provider should transfer all the data and information to the new Cloud Service Provider and will provide all necessary help to both CRUT and the new Cloud Service Provider in data migration and handover of all services. The Bidder should ensure complete deletion and disposal of data/information after seamless transfer to the new Cloud Service Provider. The Cloud Service Provider cannot sub-contract any of the activities to other vendors.
- ✓ The Bidder, in the event of CRUT deciding to either terminate the Contract or discontinue with only the hosting services of the Bidder, either during or after the Maintenance Period, will transfer all the assets along with the data to the other Vendor or any other location chosen by CRUT and will provide all necessary help to both CRUT and the new vendor in doing the same. The Bidder under any circumstances won't retain a copy of the data after such an activity and it would be a criminal offence if the Bidder is found to do so. The cost of such transfer shall be mutually decided at the time of transfer.

Provision of Security Infrastructure

The Bidder shall provide dedicated Fire wall, IPS/ IDS, authentication modules, Web Single Sign on etc. as mentioned in Requirements for Cloud Service Provider on both DC and DR.

The Bidder would also be responsible for the creation & maintenance of the directory server integrated with security modules like Authentication, Authorization & Auditing capabilities, Web single sign on, OTP management for critical components and the usage of Digital signature to ensure web-based signage of documents. The bidder should also employ the usage of a log co-relator system to ensure centralized collection and analysis of log files.

The Bidder would also ensure adequate data security mechanism in place by the usage of the database encryption and secured data back-up practice where in the data being backed up would be encrypted and password protected.

Provision of SLA Monitoring Tool including help desk software

The Bidder would have to establish an SLA Monitoring Tool which would undertake enterprise-wide proactive monitoring and management. This system would enable proactive monitoring and reporting of any and every issue faces in the enterprise. The solution would communicate with the IT assets using SNMP or equivalent technology. This solution being very critical would be setup in a high available mode. The EMS system shall be able to record and report all the SLAs mentioned in the Service Level Agreement.

Key Personnel Requirements for Project Delivery

- The bidder would be responsible to deploy adequate manpower during the implementation phase to complete the project in stipulated timelines for Go-Live.
- The successful bidder shall provide a dedicated project manager (onsite at CRUT premises) till successful go live and appropriate handholding and training of the implemented solution.
- The successful bidder shall provide a dedicated full-time onsite ITMS Support Team post CRUT approval. However, CRUT reserves the right to increase or decrease the number of resources as per its requirements.
- The successful Bidder shall identify a single point contact for CRUT as a project manager for post go live period during the period of the contract that should be present for discussions, important meetings and should act as one point contact for CRUT.
- The bidder shall provide application training and handholding to new users or refresher training to old users. Onsite ITMS support team shall ensure ongoing training support for the complete duration of the project. The onsite trainer would be required to visit various locations as decided by CRUT from time to time to deliver trainings for the entire tenure of the contract.
- The resources identified shall mandatorily do the following but not limited to:
    - Response and Resolution of queries and issues arising on daily basis.
    - Make onsite changes required at server and application level.
    - Onsite testing of patches or new versions received from Off-site before their deployment, Database maintenance and Backup management.
    - Issues tracking and MIS report generation.
    - Application Hosting Support and Back Up Maintenance
- The activities of Hosting and Back Up Maintenance shall include:
    - Backup of, database and application as per stipulated policies.
    - Monitoring and enhancement of the performance of scheduled backups, schedule regular testing of backups and ensure adherence to related retention policies.
    - Ensuring prompt execution of on-demand backups of volumes, files and database applications whenever required by CRUT or in case of upgrades and configuration changes to the system.
    - 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.
    - On-going support for file and volume restoration requests.
    - The number of resources to be deployed as on Man month basis to facilitate support on the module would be decided by CRUT.
    - Detailed role and responsibility of operational staff shall have to be indicated by along with the bid, however, CRUT reserves the right to get the plans of Bidder modified depending

upon exact requirement.

Key Positions:

#	Position	Quantity	Minimum Qualifications & Experience Required
1	Project Manager	1	• Minimum Education: BE/B. Tech + MBA/M. Tech • Total Experience: At least 12 years in IT sector • Should have more than 6 years of experience of handling similar large projects
2	Network Expert	1	• Minimum Education: BE/B. Tech • Total Experience: At least 8 years in IT sector • Should have experience in designing & implementing network solutions for at least 3 similar projects.
3	ITMS Integration Expert	1	• Minimum Education: BE/B. Tech • Total Experience: At least 8 years in IT/ICT/IoT sector • Should have experience in implementing Complex BMS (Building Management System) solutions for at least 2 projects
4	Data Center & Application Manager	1	• Minimum Education: BE/B. Tech/MCA • Total Experience: At least 10 years in IT sector • Should have experience in designing & implementing Portals & Mobile Apps for at least 2 large projects • Should have minimum 5+ years of experience of operationalization of DC/DR on virtualization environment

Note: Above mentioned resources are bare minimum requirement for project implementation. Manpower required for O&M phase will be decided during system stabilization period.

Manpower During Operation and Maintenance period			
5	Operators	12	• Minimum Education: BE/B. Tech/MCA • Total Experience: 1-3 years in IT sector • Should have experience in designing & implementing Portals & Mobile Apps for at least 2 large projects

Training and Capacity Building

The Bidder shall conduct Training Needs Assessment of all the concerned staff and draw up a systematic training plan in line with the overall project plan. The trainings shall be provided at CRUT premises as fixed by CRUT.

- Defining overall training requirements in consultation with CRUT.
- Preparation of training plan, schedule etc.
- Make provision of self-guided online training modules accessible over web or offline.
- Plan and impart training for trainers.
- Preparation of training guides/user manuals for the application and installation manual and administration manual.

- Documentation to be provided to CRUT in electronic medium and Booklet in binding form.
- Bidder is required to provide training manuals and interactive video tutorials/Self learning training modules for all the ITMS modules and applications of the customized solution as per the CRUT requirements. The manuals should be updated as and when features/ functionalities in the system changes.
- Based on the skills of the users, the bidder has to provide comprehensive training and recommend approach for the same.
- Bidder is required to provide application software training to end user. The classroom trainings can be provided in CRUT premises. All these trainings would happen post Go-Live of the application.
- Every user group would have a separate Pre and Post Implementation Training. The Training program would be split into series of sessions for different user groups and across functional areas of the ITMS.
- Bidder is required to deliver training to end users including carrying out the training effectiveness evaluation
- The onsite trainer at CRUT is required to provide trainings to all users at any location as required by CRUT.
- Following is the Indicative Training Schedule for classroom trainings:

Training for (Indicative Only)	**Period of each Training Session (Indicative Only)**
Senior Management	One day
Middle Management	Two days
Other Senior Personnel	Two days
Other End Users	Two days

User Group	**Training Requirements**	**Mode of Training**
Senior Management All division heads, Sub-heads, CRUT	Application usage MIS report analysis, Query/Search generation, Employee Self Services	One-to-One
Middle Management Nodal Officers, Section Officers, Desk officers	Application usage MIS report analysis, Query/Search generation, Data Validation, Employee Self Services	Classroom
Other Senior Personnel Assistants, Admin staff, Clerks, Operators etc.	Application usage Query/Search generation System start-up/shutdown Procedures Issue resolution processes, Employee Self Services	Classroom, self-learning
Other End Users Drivers and conductors	Application usage, Query/Search generation, System start-up/shutdown procedures, Issue resolution processes, Employee Self Services	Classroom, self-learning, user manuals

User Support and Maintenance of the Integrated ITMS Solutions for 5 years

Application Monitoring and Compliance to Service Level Agreements

It is the responsibility of the bidder to

- Monitor CRUT's ITMS application on a day-to-day basis to ensure seamless and reliable functioning.
- Monitor application to ensure that the application does not suspend, hang, downgrades in performance

etc.

- Monitor components, including but not limited to, Application servers, Web Servers, Middleware and other Servers on an ongoing basis to ensure smooth functioning of the applications.
- Plan system maintenance in accordance as per schedule defined by Bidder and approved by CRUT
- The Bidder shall ensure compliance to uptime and performance requirements of ITMS solution as indicated in the SLA (as mentioned in RFP) and any major changes to the software shall be planned accordingly, with prior approval of CRUT, by the Bidder for ensuring the SLA requirements.
- Ensure the accuracy and timeliness of data uploaded as received.
- Resolve and report the data discrepancies to the designated CRUT persons.
- The Bidder shall submit a document on the performance of the ITMS application against the desired SLA on a Quarterly basis.

Application support including modification and integrations with future systems

It is the responsibility of the bidder

- Enhancement / modifications with respect to new / enhanced / enriched functionality
- Ensure the desired functioning of the Interface / integration
- Test scripts preparation and interim application testing
- Application installation and testing whenever required
- Modification / development of reports
- Provide technical support on system parameters and requirement for CRUT's Enterprise Applications Software
- Manage the database administration according to the agreed standards.
- Present relevant information and training if applicable and necessary regarding the use and functions of new products and services to a defined number of relevant Users designated by CRUT.
- Provide handholding support to end users in carrying out the business process transactions.

Contingency plans for Application & Data recovery

The DR would work as the failover site in case the data center goes down. This includes application crash, database crash, network crash or any other issues rendering the data center unresponsive. In case of Application Crash, effort will be made to bring back the application to working state through the most recent application state & configuration files from the DR and if required the backup / restore and reinstallation procedure would be used if the same is available in the backup set or as a last resort if the DR also fails. It will be taken up on a high criticality basis with round the clock support to ensure the application state is reverted to the most recent state.
In case of Database Crash – Effort must be made to retrieve as much data as possible from the dataset of the DR with the most recent copy of the data. If the last backup set also includes the most recent copy of the data, then that can also be used for restoration of the database. If required, previous backups will be used to ensure restoration. However, the Bidder needs to honor the RPO (Recovery Point Objective) & RTO (Recovery Time Objective) mentioned in the (RFP). Bidder should be on this job round the clock to restore availability.

Issue Management

Issues Management is an important activity and based on the severity level, it becomes highly critical. As the parties involved are Users/ functional team members of CRUT, Application providers and Bidder, SLAs may not be directly defined. Bidder commits involvement in resolution on 'best of efforts' basis as per requirements. Following are the steps involved:

- Problem definition
- Context definition (through functional teams as per requirements)
- Request Analysis by Bidder

- Priority Categorization
- Logging with OEM and tracking to resolution

The Bidder shall address all the errors/bugs/gaps in the functionality offered by the ITMS solution (vis-à-vis the FRS) at no additional cost during the operations & maintenance period (i.e., 5 years from the date of final GO-Live). The Bidder shall identify and resolve application problems like system malfunctions, performance problems, data corruption etc. due to which the ITMS solution is not able to give the desired performance.

The Bidder shall be responsible for the following:

- Updating all available patch/ updates to the ITMS solution.
- Providing handholding support to end users
- Ensuring proactive and timely support in identification and provision of solutions including OEM Support for resolution.
- Timely logging of Bugs/Problems
- Daily / Weekly / Monthly Status Reports to CRUT & other Project Stakeholders.

Software Change and Version Control

- The Bidder shall define the Software Change & Version control process and obtain approval for the same from CRUT.
- The Bidder shall maintain version control and configuration information for any system documentation and application software.
- Any changes/customizations to the ITMS application performed/ identified within the period of six months post "Go-Live" are not to be considered as separate Change Requests and hence are to be carried out by the Bidder at no extra cost.
- All configuration changes or minor customizations to the ITMS application which don't involve the creation of any new development object (even if identified after the stabilization period of six months post "Go-Live") are not to be considered as separate Change Requests and hence are to be carried out by the Bidder at no extra cost.
- Only those major functional customization changes (requiring more than 3-man months effort) in the solution which have neither been mentioned in the FRS, nor included in the To-be functional solution and have not been proposed within six (6) months from "Go Live", shall be carried out through a separate Change Control Note/Notice (CCN) prepared by the Bidder (format has been provided). The effort & cost estimates shall be based on the man-month cost quoted by the Bidder for Configuration, Customization and Extension (New Modules) of ITMS System in the commercial quote (Annexure). This cost per man-month shall remain unchanged during the contract period.
- Changes in the application software which are mandatorily required for complying with any of the predefined SLA requirements, FRS or To-be Functional solution cannot be treated as a separate Change Request, and hence are to be completed by the Bidder at no extra cost.
- All Change Requests submitted by the Bidder will contain an effort estimate, which would be discussed with and approved by CRUT. CRUT may ask the Bidder to provide justification using standard methodology like Function Point Analysis or any similar method.
- All changes during the stabilization or support & maintenance phase shall be subjected to the comprehensive & integrated testing by the Bidder to ensure that the changes implemented in the system meets the desired and specified requirements of CRUT and doesn't impact any other function of the system.
- The Bidder shall submit a Quarterly Report on the changes performed on the application and resolution of malfunctions carried out by the Bidder
- Troubleshoot all possible problems, monitor erratic behavior through the Application Logs.
- All planned changes to application systems shall be coordinated within established Change Control processes to ensure that:

- Appropriate communication on change required has taken place
- Proper approvals have been received
- Schedules have been adjusted to minimize impact on the production environment

- For any changes to the software, Bidder shall submit a document indicating proposed changes, impact to the system in terms of functional outcomes/additional features added to the system etc.
- The Bidder is required to obtain prior approval from CRUT for all the proposed changes before implementing them into production environment. Such documentation shall be reviewed at the end of each quarter of operations & maintenance support by CRUT.
- The Bidder is required to keep all such documentation up to date to reflect the latest enhancements/modifications made to the application. All documentation should be prepared as per latest industry standards and should incorporate necessary version control mechanism.

Maintenance of Configuration Information & System documentation

The Bidder will provide detailed final system documentation for reference to CRUT. Bidder shall prepare the final User Manuals incorporating details of all menus and functionality provided by the System. CRUT expects the following (but not limited to) in the form of product documents mentioned in the RFP.

7. Operations and Maintenance of Cloud hosted ITMS Solution

Operations and Maintenance of Cloud hosted ITMS shall include a range of services related to the operation & maintenance of the IT infrastructure at the Data center and DR site.
Following services shall form a part of managed services:

- ✓ On- Cloud hosting &
- ✓ Monitoring and Management Services

The Bidder shall provide monitoring and management services for an agreed service window during the period of 5 years from the date of final acceptance test (Final Go live). The scope of the services for overall Cloud Service management during this period shall include Monitoring, Administration and Management of the Cloud. The entire stack of monitoring and management services shall include the following:

- ✓ Help Desk Services
- ✓ Monitoring, Administration & Management Services of Cloud
- ✓ Backup & Restore and Archival Services
- ✓ Storage Administration & Management Services
- ✓ Database Administration & Management Services
- ✓ User Administration and Security
- ✓ Security Administration of ITMS Solution
- ✓ Network Administration and Management Services
- ✓ Annual Maintenance Contract
- ✓ Annual Technical Service

Help Desk Services

The bidder will depute staff who will be contactable via phone and mail to provide assistance to the Users and address their queries and concerns. This assistance will be provided during the Service Hours, or upon prior request beyond the Service Hours, as per the location classification and responsibility matrix, which will be covered in the Operations Manual provided by Bidder and duly approved by CRUT. During all other hours,
Users can leave their message via email. The requests received on email will be taken during the next working day.
A proper escalation procedure, as mentioned in the duly approved Operational Manual, will 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 will serve as a single point of contact for all incidents and service requests. The service will provide a Single Point of Contact (SPOC) and also escalation / closure of incidents for the user departments. The Help desk services would be for Cloud Management and Application support across CRUT 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:
  - o Specific E-Mail account
  - o 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
- ✓ Analyze 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 CRUT.
- ✓ Analyze 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 CRUT with complete and accurate system status.
- ✓ Notify CRUT'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 CRUT in case of service levels not adhered to.
- ✓ Provide detailed contact list of Help Desk Support to CRUT.
- ✓ Receive log and dispatch or transfer calls.
- ✓ Make the guidelines for prioritization of calls and escalation procedure for approval by CRUT.
- ✓ 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 CRUT on calls handled by Help desk.
- ✓ CRUT will
    - Provide the contact list of all CRUT'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.
- ✓ Implementation: Detailed process will be defined after consultations and discussions with CRUT.

Monitoring, Administration & Management Services of Cloud

The cloud shall be centrally and remotely monitored and managed on a 24x7x365 basis.
The Cloud management and maintenance services shall include:

- ✓ Proactive and reactive maintenance of services rendered on Cloud. The cost of maintenance

shall be borne by the Bidder.

- ✓ The selected Bidder will ensure that the uptime commitment as per SLA is met to provide composite service availability. To provide this service, it is important for the selected Bidder to have back-to-back arrangement with the Cloud Service Provider (CSP).
- ✓ Services that are reported to be down on a given date should be resolved within the time frame indicated in the Service Level Agreement (SLA). In case the selected Bidder fails to meet the above standards of maintenance, there will be a penalty as specified in the SLA.
- ✓ The selected Bidder shall also maintain records of all maintenance of the system and shall maintain a logbook that may be inspected by CRUT at any time.
- ✓ Systems Administration Services performed by Bidder shall ensure that CRUT's IT Environment operates smoothly, securely and consistently. It also ensures optimized use of IT resources.

Bidder shall ensure following Server Administration activities in collaboration with Cloud Service Provider for CRUT:

- ✓ Configuration of server, storage, networking & security component parameters, operating systems administration and tuning.
- ✓ Adequate hardening of the operating systems of the servers, storage & network and security to prevent and known & unknown attacks.
- ✓ Operating system administration, including but not limited to management of users, processes, resource contention, preventive maintenance and management of upgrades including migration to higher versions and patches to ensure that the system is properly updated.
- ✓ Re-installation in the event of system crash/failures.
- ✓ Performance log monitoring of servers including but not limited to monitoring CPU, disk space, memory utilization, I/O utilization, etc.
- ✓ Event log analysis generated in all the sub systems including but not limited to servers, operating systems, databases, applications, security, messaging, etc. Ensuring that the logs are backed up and truncated at regular intervals and sent to the centralized log correlation system for safekeeping and analysis.
- ✓ Periodic health check of the cloud and ITMS solution, troubleshooting problems, 88pprox.88g and implementing rectification measures.
- ✓ Troubleshooting issues in the infrastructure, network and ITMS application to determine the areas where fixes are required and ensuring resolution of the same.
- ✓ Identification, diagnosis and resolution of problem areas pertaining to the Cloud and application and maintenance of assured SLA levels.
- ✓ Implementation and maintenance of standard operating procedures for maintenance of the Cloud based ITMS Solution based on CRUT's requirements.
- ✓ Management of the user names, roles and passwords of all the relevant subsystems.
- ✓ Executing hardware and software updates when necessary
- ✓ Cloud performance monitoring, fine-tuning and optimization
- ✓ Diagnosing and Problem Resolution related to Cloud
- ✓ Pro-active Disk management /Capacity planning
- ✓ Configuration changes
- ✓ Understanding Performance Bottlenecks
- ✓ Perform file back-up/recovery as defined in the process
- ✓ Virus detection and correction
- ✓ Bidder will make available, monitor and process on-line and batch applications, including scheduled, unscheduled and on-request services and processing initiated by users.

Backup & Restore and Archival Services

- ✓ These services provide for files availability on applications and supported servers for users
- ✓ Backup of operating system, database and application as per stipulated policies for Cloud.
- ✓ Monitoring and enhancement of the performance of scheduled backups, schedule regular testing of backups and ensure adherence to related retention policies.
- ✓ Ensuring prompt execution of on-demand backups of volumes, files and database applications whenever required by User Departments or in case of upgrades and configuration changes to the system.
- ✓ 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.
- ✓ The backup practice should ensure the usage of concepts of GFS (Grandfather Father Son) backup scheme to ensure backup of every day, every week, every month & every year.
- ✓ The backup process should encrypt the backup and store them securely.
- ✓ For every backup a pre backup test should be used to ensure higher rate of success for the backup.
- ✓ The backup process should use incremental backup for all the days and a full back up at the end of the week. This would ensure faster backup & restoration without compromising on the availability of the backup data.
- ✓ The backup solution used should be able to integrate with the Virtual Tape Library to ensure faster backup & restoration process.
- ✓ Policy driven archival of the data in the low-cost storage box i.e., the Virtual tape library. These policies would be formulated as per the business needs of the process and would be finalized during the actual project implementation.
- ✓ Ongoing support for file and volume restoration requests on Cloud
- ✓ Control all the files during the scheduled access times.
- ✓ Initiate and complete required data processing activities concerning data integrity of all processed files.
- ✓ Verify, using tools and procedures, all the incoming files and outgoing files.
- ✓ Document, maintain, update and execute CRUT's approved file and back-up and recovery procedures.
- ✓ Conduct regular back-up and recovery procedures as specified in the document and prioritized by CRUT.
- ✓ Conduct routine monitoring and take corrective action.
- ✓ Verify availability of adequate file space for processing.
- ✓ Report disk space utilization for capacity planning purposes

Storage Administration and Management Services

The bidder in collaboration with Cloud Service Provider (CSP) shall ensure:

- ✓ Installation and configuration of the storage system on Cloud in accordance to the application requirement.
- ✓ Required number of VLANs should be created in the SAN to optimize the speed and storage of data. The VLANs created would also ensure segregation of the data as per the application requirement. The VLANs should be dynamically configurable for the space allocation.
- ✓ Management of storage environment to maintain performance at desired optimum levels. Configuration of SAN is to be carried out whenever a new application is hosted on Cloud. This shall include activities such as management of storage space, volume, RAID configuration, LUN,

zone, security, business continuity volumes, performance, etc.

Database Administration and Management Services

The bidder will be responsible for

- ✓ Provide operating system / data base support to the data base environments.
- ✓ Monitor and report the performance of the database and recommend modifications to improve the database performance.
- ✓ Suggest, Maintain and/or implement database backup procedures to recover from a database outage or corrupted databases within time frames specified in the Operations Manual.
- ✓ Maintain physical database definitions and make them available to CRUT.
- ✓ Promote the database changes into the production environment as CRUT approves.
- ✓ In cooperation with CRUT, maintain the database access routines applications development and software maintenance personnel use and document any change to same.
- ✓ Assist in problem determination and resolution of the same.
- ✓ End-to-end management of database on an ongoing basis to ensure smooth functioning of the same.
- ✓ Management of changes to database schema, disk space, storage, user roles.
- ✓ Conduct code and configuration reviews to provide tuning inputs to the State / User Department in order to improve the application performance or resolve bottlenecks if any.
- ✓ Performance monitoring and tuning of the databases on a regular basis including, preventive maintenance of the database as required.
- ✓ Management of database upgrade or patch upgrade as and when required with minimal downtime.
- ✓ Regular backups for all databases in accordance with the backup and archive policies and conduct recovery whenever required with appropriate permissions.
- ✓ Implement the database encryption solution in high availability mode in DC and Standalone mode in DR to ensure data security.

User Administration and Security

The bidder will be responsible for

- ✓ Defining Identity and Access Management (IAM) matrix for all user groups and their corresponding access rights. The Super Admin control should lie with IT Cell, CRUT
- ✓ Maintain access control and provide individual and group access to VPN resources from CRUT's authorized users.
- ✓ Register new users and delete existing user's accounts as per CRUT requests.
- ✓ Assign and change user passwords
- ✓ Implement adequate password complexity policy across the enterprise.
- ✓ Use of Single Sign On solution for all CRUT users and their privileges.
- ✓ Undertake the usage of the Authentication, Authorization & auditing module for mapping all the users
- ✓ For critical user transactions, employ the usage of the OTP solution
- ✓ Also employ the usage of Digital Signature of designated users for the digital signage of the documents within the solution

Security Administration of IT Solutions

The activities to be carried out under security administration shall include:

- ✓ Addressing the ongoing needs of network security management including, but not limited to,

monitoring of various system solution components such as firewall, intrusion detection, content filtering and blocking, virus protection, and vulnerability protection through implementation of proper patches and rules.

- ✓ Protecting all the IT assets to prevent any known & unknown attacks.
- ✓ Root domain administration by setting the root level security policies such as authentication mechanisms (single/multi factor), password policies such as password length, password complexity, password expiry, account lockout policy, certificate policies, IPSEC policies etc.
- ✓ Maintaining an updated knowledge base of all the published security vulnerabilities and virus threats for related software, Database, environments etc.
- ✓ Ensuring that patches/ workarounds for identified vulnerabilities are patched / blocked immediately.
- ✓ Respond to security breaches or other security incidents and coordinate with respective OEM or CSP in case of a new threat is observed to ensure that workaround / patch is made available for the same.
- ✓ Provide evidence of a well-designed access management system, security of physical and digital assets, data and network security, backup and recovery etc.
- ✓ The Bidder shall be responsible for the security audit of the proposed solution network and its related infrastructure to be carried out by a certified agency other than the Bidder itself.
- ✓ Ensuring that the security policies is maintained and updates to the same are made regularly as per ISO/IEC 27001:2013, ISO/IEC 20000-1:2011 guidelines
- ✓ Operating system security through appropriate configuration and patch updates.
- ✓ Periodic reviews of domain level rights and privileges.
- ✓ Obtain CRUT permission before making any changes and/ or updates to the production environment.
- ✓ Plan system maintenance as per schedule defined by Bidder and approved by CRUT.

Network Monitoring & Management Services

The objective of this service is to ensure continuous operation and upkeep of the Cloud hosted solution.

- ✓ Ensuring that the network is available 24x7x365 as per the prescribed SLAs
- ✓ Attending to and resolving network failures and snags
- ✓ Support and maintain the overall cloud service and infrastructure across all CRUT locations.
- ✓ Configuration and backup of network devices including documentation of all configurations.
- ✓ 24x7x365 monitoring of the network to spot the problems immediately so as to meet the desired SLAs
- ✓ Provide information on performance of Network segments, including capacity utilization and error statistics for the segment and the top-contributing hosts.
- ✓ Bidder shall create and modify VLAN, assignment of ports to appropriate applications and segmentation of traffic between CRUT Office and other offices. Bidder should ensure that the failover to the redundant network connectivity is undertaken seamlessly to ensure smooth operations.

Annual Maintenance Contract

Bidder shall provide comprehensive AMC for the proposed Cloud based ITMS Solution for 60 months from the date of Go-live.

- ✓ The selected Bidder shall be required to sign an Annual Maintenance Contract for Software & Services as per the provisions made in this tender document.

- ✓ CRUT is not obliged to continue with the Bidder providing AMC and may choose another Bidder as AMC Partner.
- ✓ The Bidder shall quote for year-wise comprehensive Annual Maintenance Contract for the period of 5 years from the date of Final Go-Live.
- ✓ During the implementation period Bidder shall perform all the functions as enunciated under the AMC at no extra cost to CRUT. All the penalty clauses shall be applicable during the implementation period in case of failure on part of Bidder.
- ✓ The support for planning, optimization and tuning of Cloud Services after commissioning, whenever needed during Operation period/ AMC shall be provided by Bidder at no extra cost to CRUT.
- ✓ The Bidder shall carry out regular Preventive Maintenance (PM) of all hardware and testing for virus, if any, and should maintain proper records for such PM.
- ✓ Failure to carry out such PM will be a breach of AMC and the AMC period will be extended by the period of delay in PM.
- ✓ The Bidder shall ensure that the AMC complies with the agreed Technical Standards, Security Requirements, Operating Procedures, and Recovery Procedures.

Annual Technical Services

- ✓ Bidder shall maintain data regarding entitlement for software enhancements, refreshes, replacements and maintenance.
- ✓ Bidder should carry out any requisite adjustments / changes in the configuration for implementing different versions of Application Software.
- ✓ Updates: The Bidder shall provide and implement from time to time the Updates of the software and operating systems as required. The Bidder should provide updates & patches of the ITMS software and tools to CRUT as and when released by OEM without any cost to CRUT. All the software shall have the latest updates at the end of Contract period of 5 years.
- ✓ Bidder shall provide patches to the licensed software including the ITMS software, operating system, databases and other applications.
- ✓ Software License Management. The Bidder shall provide for software license management and control. Bidder shall provide complete manufacturer's technical support for all the licensed software problems and/or questions, technical guidance, defect and non-defect related issues. Bidder shall provide a single-point-of-contact for software support and provide licensed software support including but not limited to problem tracking, problem source identification, problem impact (severity) determination, bypass and recovery support, problem resolution, and management reporting.
- ✓ Technical support for off the shelf applications/ tools shall at a minimum include online technical support and telephone support during CRUT's business hours (Business hours in CRUT will be from 0900 hours to 1800 hours on weekdays (Mon-Sat) with access for CRUT and Bidder to the manufacturer's technical support staff to provide a maximum of 4 hour response turnaround time. There should not be any limits on the number of incidents reported to the manufacturer. CRUT shall have access to the online support and tools provided by the manufacturer. CRUT shall also have 24x7 accesses to a variety of technical resources including the manufacturer's knowledge base with
- ✓ Complete collections of technical articles.

8. Technical Specifications-Hardware

AVLS Hardware

GPS Device for City Buses

1	TECHNICAL SPECIFICATIONS	Compliance (Yes/No)	Documentary Reference
	a. Processor: 32/ 64 bit		
	b. Operating system: embedded Windows/Linux / RTOS with programming software or device OS		
	c. Memory :128 K SRAM Minimum		
	d. Flash :256 K Minimum		
	e. Interface: RS 485 / RS 232 / Ethernet / USB		
	f. Interface protocols: as specified elsewhere in this document		
	g. In built GPS with: 2G/3G/4G Modules as per the device.		
	h. Antenna for GPS/GPRS using RG174 cable. The connectors on antenna will be preferably SMA(M) ST plug type for GPS and FME(F) jack type ¼”-36UNS-2B.		
	i. Temperature range -10°C to +80°C		
2	GPS MODULES		
	a. Rating :22 tracking/66 acquisition minimum		
	b. Tracking Sensitivity :160 dBmtyp Min		
	c. Navigation Sensitivity; -148 dBmtyp		
	d. Update Rate: 1 Hz (configurable to 10 Hz)		
	e. Time to first fix cold acquisition: 35 seconds typ		
	f. Hot Acquisition :1 -2 second typ.		
	g. Navigation Accuracy :2.5 m horizontal		
	h. Hot Start :< 1 Secs		

	i. Cold Start :< 35 Secs		
3	GSM MODULES		
	a. GSM/GPRS SMT: Quad band or UMTS (2G/3G/4G)		
	b. Temperature Range: -10°C to + 80°C		
	c. TCP/IP and UDP: Yes		
4	ANTENNA		
	a. AMPS 850MHz, GSM900MHz, ISM868MHz, DCS1800MHz, PCS1900MHz, UMTS 2.1GHz, GPS (1575.42MHz). Separate WLAN antenna may be provided if necessary.		
4.1	GPRS		
	a. Impedance :50 Ohm		
	b. Radiation Pattern: Omni-directional		
	c. Polarization Linear: Vertical		
4.2	GPS		
	a. Impedance :50 Ohms		
	b. VSWR :<1.5:1		
	c. Polarization: RHCP		
	d. RG174 cable		
5	COMMUNICATION BETWEEN GPA DEVICE AND /CENTRAL CONTROL CENTRE (CCC)		
	a. GPS Device to CCC: Raw GPS data in NMEA 0183 protocol (GPVTG, GPGGA, GPRMC, GPGSV and GPGSA)		
	b. Open public communications network services 2G/3G/4G and download compatibility		

PIS for BQS

#	Particular	Specification	Compliance (Yes/No)	Documentary Reference
	Size of displaying area	768 x 192 mm (W x H)		
	Size of body of display	900 x 250 mm (W x H)		
	Pitch	6mm (H) 6mm (V)		
	Resolution	128 x 32 (W x H)		
	Colour	RGB 7 color day light readable		
	LED	SMD		
	Angle of viewing	minimum 160°V, 110°H		
	Min. & Max. Viewing distance	2-30 meters		
	high of display character	94mm		
	number of characters per route	128, but on the display, will display characters dipped on font style. If it be over displaying area the route will scroll.		
	Intensity of Light	2500 candelas or more sq/m		
	Line vertically	2-line English/Odia/Hindi		
	Line height	16 pixel (95pprox.. 96 mm)		
	Communication protocol	GPRS/HTTP		
	Controller and antenna	inbuilt in display		

#	Particular	Specification	Compliance (Yes/No)	Documentary Reference
	Minimum life	50000 Hrs		
	Powers supply	190V to 250V AC 50Hz		
	Update information	real time (configurable interval)		
	Length of the message for a particular route; information that needs to be displayed in English & Odia & Hindi	a) Route No.: The vehicle Route Identity b) Vehicle No.: The Vehicle Identity of the bus c) Time: Estimated Time of Arrival of the bus at the given bus Stop d) Service Class: Type of service like Limited stop Service etc. e) Destination: End point of the Trip f) Via – en-route information Marathi) Font style and size configurable.		
	Environmental specification	(a) temperature 0 to +55°C (b) thermal cycling 5°C/mt I humidity: 5% to 95% RH (d) sealing IP65		

AFCS Hardware

Station Server/IOT Device

Particular	Specification	Minimum Specification required	Compliance (Yes/No)	Documentary Reference
Processor	CPU	Dual core or Above		
	Frequency	1.66 GHz & above		

Particular	Specification	Minimum Specification required	Compliance (Yes/No)	Documentary Reference
	Core Number	2		
	L2 Cache	1 MB		
	BIOS	AMI EFI 16Mbit		
Memory	Technology	DDR2 667MHz		
	Capacity	2 GB		
	Socket	1 x 200-pin SODIMM		
Expansion	Slot Type	1		
	Mini PCI	1		
Ethernet	Controller	Support wake on LAN.		
	Speed	10/ 100/ 1000 Mbps		
	Connector	RJ45 x 1 minimum		
Audio	Audio Interface	HD Audio		
	Connector	1 (Line-in, Line out, Mic-in)		
Storage	SATA	1 x SATA II		
I/O	USB2.0	6		
	COM Port	6 (1 x RS232, 3 x RS232/ 422/ 485, 2 x RS-422/ 485)		
Power	Power Type	ATX, AT		
	Power Supply Voltage	Vin: 12-24V		
	Connector	2-pin		
	Power Consumption (Idle)	12.62W		
	Power Consumption (Full Load)	15.87W		
	Power Adaptor	Optional		

Particular	Specification	Minimum Specification required	Compliance (Yes/No)	Documentary Reference
Environment	Non-Operational Temperature	-40~ 85° C and 40° C @ 95% RH Non-Condensing		
Physical	Dimension (mm)	264.5 x 133.0 x 69.2 mm		
	Weight	2 kg (4.4 lb)		
Operating System	Microsoft Windows	Yes		
Certification	EMC	CE/FCC		
	Safety Certifications	UL		

Electronic Ticketing Device

Module / Component	Description	Compliance (Yes/No)	Documentary Reference
Processor	32-bit ARM11		
Memory	192MB standard (128MB Flash, 64MB DDR) Micro SD (TF card) up to32GB		
Display	3.5 inch 240 x 320 pixel TFT colour LCD Touch screen		
Keypad	10 numeric / letter keys, 8 function keys Back-lighting		
Printer	Fast thermal printer (18 lps) or faster depending on font size Paper roll width / diameter: 58mm /38mm		
Card Slots	2 SAMs, 1SIM		
Magnetic Card Reader	Track 1 / 2 / 3, bi-directional		

Module / Component	Description	Compliance (Yes/No)	Documentary Reference
Contactless Card Reader(optional)	MasterCard Pay Pass& Visa pay Wave 13.56MHZ, ISO / IEC 14443 Type A/B, Mifare®		
Audio	Speaker		
Communication	GPRS / 3G(WCDMA)		
Peripheral Ports	1xminiUSB 1 x RS232 1 x power charge		
Security	DUKPT/Master / Session/DES/3DES/AES		
Battery	Li-ion batteries 1850mAh, 7.4V		
Voltage	Input: 100~240VAC, 50Hz / 60Hz, 1.0A Output: 9VDC,2.5A		
Physical	Length: 175mm Width: 82mm Height:63mm		
Certifications	PCI PTS 3.x MasterCard Pay Pass Visa pay Wave EMV Contactless L1		

Point of Sale

Sr. No.	Particular	Minimum Specification
1	CPU	Intel Pentium Dual-Core E5300 1.8 GHz
2	Memory	Up to 2GB DDR3 RAM with Single DIMM slot
3	HDD	2.5" SATA HDD (min. 160GB) Second SATA HDD (min. 160GB)-options Solid State Drive (SSD)-options
4	O/S	Microsoft Windows 7 Microsoft Windows XP POS Ready WNLPOS (Linux)

Sr. No.	Particular	Minimum Specification
5	Input device	Keyboard & Mouse
6	Port	Standard port (RS232) – 1 Unit Power – 3 USB (2.0) – 2 Front/ 4 Side USB – 2x1V , 1x24V Keyboard – P/S 2 Mouse – P/S 2 Line In/Line Out/ Mic- 1/1 Money tray – 1 Display – 1 LAN – 10/100/1000 Mbits Parallel port 1 (optional)
7	Power Supply	304W with +5VDC standby, PFC, 80 Plus. Voltage in115/230VAC 1x12VDC for display 1x24VDC for printer
8	Dimension	310 (W)x 295 (H) x 103 (D)
9	Thermal Printer	3” Width, Auto Cutter
10	Customer Display	LCD Based Customer Display
11	Smartcard Reader	Contact and Contactless Card Reader ISO 14443 A/B, Mi-Fare family (classic, Ultralight „c“ Des-Fire, etc.). contactless smartcard reader
Touch Screen Monitor		
1	LCD type	15’’ TFT-LCD
2	Model	LP-15Rxx
3	Panel	Viewing Area - 15”
4		Resolution - 1024(H) x 768(V) XGA
5		Color- 16.7M
6	Video Input	VGA Signal- R/G/B Analog VGA
7	Control	Power – On / Off with LED Indicator OSD – OSD Control with “itouch” auto scaling
8	Power Adaptor	Input – AC Input 100 ~ 240 V, 50 / 60 Hz Output – DC +12 V

Sr. No.	Particular	Minimum Specification
9	Safety & EMI	FCCB, ETL, ETLC, CE, TÜV / GS, CCC
10	Application	POS, Banking, ATM, IPC, TML, Web IA, Mini PC,
11	Touch Panel	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 Colour – Black or aesthetically pleasing
Cash Vault		
1	Features	Base or countertop cash drawer Front-opening Removable coin tray Variable for deployment in different national and international application scenarios High-capacity. Entry-level cash drawer Size of banknote and coin compartments variable to allow for different currencies Space for checks, documents, wrapped coins Opening under software control, or emergency opening Cash drawer lock
2	Technical Data	8 large coin compartments (4 of variable width) 4 banknote compartments (size adjustable) compartment for checks, bad receipts or documents
3	Electrical Characteristics	Operating voltage: 24 V (-10% / +10%) Opening pulse current: Max. 1 A
4	Connection /cabling	RJ12 (1,5 m cable included) for connection to BEETLE POS systems and POS printers with a cash drawer interface
5	Dimensions	Depth: 425 mm Width: 410 mm Height: 114 mm
6	Weight in kg	Less than 6.8 kg
7	Color	Light gray
8	Features	Base or countertop cash drawer Front-opening, Removable coin tray Variable for deployment in different national and international application scenarios High-capacity. Entry-level cash drawer Size of banknote and coin compartments variable to allow for different currencies Space for checks,

Sr. No.	Particular	Minimum Specification
		documents, wrapped coins Opening under software control, or emergency opening Cash drawer lock
9	Technical Data	8 large coin compartments (4 of variable width) 4 banknote compartments (size adjustable) compartment for checks, bad receipts or documents
10	Electrical Characteristics	Operating voltage: 24 V (-10% / +10%) Opening pulse current: Max. 1 A
11	Connection /cabling	RJ12 (1,5 m cable included) for connection to BEETLE POS systems and POS printers with a cash drawer interface
12	Dimensions	Depth: 425 mm Width: 410 mm Height: 114 mm
13	Weight in kg	Less than 6.8 kg
14	Color	Black or aesthetically pleasing
15	Features	Base or countertop cash drawer Front-opening Removable coin tray Variable for deployment in different national and international application scenarios High-capacity. Entry-level cash drawer Size of banknote and coin compartments variable to allow for different currencies Space for checks, documents, wrapped coins Opening under software control, or emergency opening Cash drawer lock

Technical Specification

Video wall

Sr. No	Particular	Minimum Specification	Compliance (Yes/No)	Documentary Reference
1	Configuration	Backlight LED Video wall 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		

Sr. No	Particular	Minimum Specification	Compliance (Yes/No)	Documentary Reference
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		
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 softwares		
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		

Sr. No	Particular	Minimum Specification	Compliance (Yes/No)	Documentary Reference
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 centre manned by its own engineers for providing support		

Digital Display

Item	Specification	Compliance (Yes/No)	Documentary Proof
Panel size	50 inch		

Item	Specification	Compliance (Yes/No)	Documentary Proof
Dimensions	1910 x 840 x 70mm		
Brightness	500cd/m2		
Display area	1210mm×682mm 16:9		
Maximum resolution	1920X1080		
Display color	16.7		
Visual angle	178°/178°		
Response time	5ms		
Life(hrs)	>60,000(hrs)		
Input and output			
USB	1		
SD	1		
CF	1		
Speaker	2×5W(9Ω)		
Video			
Color system	PAL/NTSC		
Remote controller	IR Remote Controller		
Support Media Play Format	All format Video, all format music, Image (JPG, GIF, BMP, PNG)		
Display (screen menu display)			
Menu language	English		
Power			
Power supply	AC100~240V 50 /60 HZ		
Maximum power consumption	<=280W		
Standby power consumption	<5W		
Temperature			
Working temperature	0°C~50°C		
Storage temperature	-20°C~60°C		

Item	Specification	Compliance (Yes/No)	Documentary Proof
Working humidity	85%		
Storage humidity	85%		
Appearance			
Case	Metal casing		
Installation	Floor-standing		

Networking Components

Required Layer 2 and Layer 3 switches as per the sizing (to be decided by SI).

Any other component which may be necessary for the smooth working of the solution.

9. Unpriced Bill of Quantity:

A – Hardware Components			
Sr. No.	**Component**	**Qty**	**UOM**
1	**IN-BUS ITMS Solution Components**		
1.1	OBITMS Hardware for Buses with SIM card	50	Nos.
1.2	Integration for OBITMS Hardware for E-Rickshaws	500	Nos.
1.3	ETM/POS hardware for E-ticketing with SIM card	715	Nos.
1.4	ETM Charging Ports inside buses	225	Nos.
2	**BUS STATION & TERMINALS – ITMS Solution Components**		
2.1	Station PIS Solution board with Inbuilt controller & GPRS Module for communication with command centre	20	Nos.
2.2	Terminal PIS Display with controller (LED TV) & GPRS Module for communication with command centre with IP-65 casing & mounting structure for outdoor mounting	2	Nos.
2.3	ETM/ POS hardware for E-ticketing at terminals	8	Nos.
2.4	Smartcard Issuance Unit	8	Nos.
2.5	ETM/ POS Pigeon Case Charging Unit	8	Nos.
2.6	IP Public Address System for Terminals	4	Set
2.7	Emergency Call Button	16	Nos.
2.8	GSM Router with 2 SIM cards	4	Set
2.9	8 Port Industrial Grade Switch	4	Set
3	**Depot – ITMS Solution Components**		
3.1	AFCS Workstation	20	Nos.
3.2	Depot Manager Workstation	7	Nos.
3.3	L2 Access Switch (24 Port)	6	Nos.
3.4	CCTV with local 16 Channel NVR, 5 nos. 2MP IP CCTV Bullet Camera and 32” Monitor complete with keyboard and mouse	6	Set
3.5	IP Public Address System for Terminals	6	Set
3.6	Access Control System	6	Set
3.7	Biometric Attendance System	6	Set
3.8	Digital Clock	6	Nos.

3.9	12U Racks	6	Nos.
3.10	120 MBPS Broadband connection with routers from two different service providers	6	Set
3.11	ETM/ POS Pigeon Case Charging Unit	6	Nos.
3.12	Electrical work including all power points and accessories for ITMS equipment	6	Lot
3.13	Local Networking Work including all equipment & accessories for ITMS equipment	6	Lot
4	**Central Control Centre (CCC) Infrastructure**		
4.1	3 x 3 (55'') LED Video Wall with all accessories for ITMS	1	Set
4.2	Furniture for CCC	1	Lot
4.3	CCTV Surveillance Cameras with NVR	1	Set
	The bidder needs to ensure the visual coverage of the CCC with at least 10 numbers of PTZ/Fixed cameras with 30 Days of storage.		
4.4	EPABX System with IVRS System	1	Set
4.5	Biometric Reader with Retina/Face Scanner	1	Set
4.6	Work Stations with two monitors	6	Nos.
4.7	Firewall (UTM)	2	Nos.
4.8	Internet Router	2	Nos.
4.9	L3 Switch/Edge Router	2	Nos.
4.10	L2 Access Switch (24 Port)	4	Nos.
4.11	Master Clock System	1	Nos.
4.12	Digital Clock	2	Nos.
4.13	IP Public Address System	1	Lot
4.14	Access Control System	1	Lot
4.15	Biometric Attendance System	1	Lot
4.16	UPS with 1 Hour of Backup	1	Lot
4.17	42U Racks	1	Lot
4.18	Internet Line (MPLS)	2	Nos.
B - Software Solution Components			
Sr. No.	Solution Software Component	Qty	
1	Automated Vehicle Tracking Software (AVLS)	1	
2	Incident Management Software along with Helpdesk solution	1	

3	PIS Management Software solution	1	
4	BI / MIS Reporting	1	
5	Mobile Application (IOS and Android Platform)	1	
6	GIS Map Platform	1	
7	Web Portal	1	
8	Vehicle Planning and Scheduling System	1	
9	Depot Management Solution	1	
10	AFCS Solution S/W including AFCS centralised S/W and HHT/ETM & POS Solution	1	
11	Integration with Existing ITMS & Other Third Party Software & Hardware	1	
C # O & M - Software Hosting/Server Management & Connectivity for 5 Years			
Sr. No	Solution Component	Units	
1	Connectivity Charges for CCC	2	
2	Connectivity for Station/Stop PIS	21	
3	Manpower for CCC support	1	lump sum
4	Software Solution Hosting at Cloud Server for DR	1	
5	Standard Business Licenses of Office 365 services	15	
6	Perpetual Licenses for ITMS	1	lump sum
D # AMC Charges for S/W and H/W			
Sr. No	Solution Component	Units	
1	AMC Charges for Hardware	1	
2	AMC Charges for Software	1	
3	Consumables	1	

Note:

- CRUT reserves the right to increase or decrease resources during the tenure of the contract. Payment for the resources would be made at actual deployment.
- The Capex will be capped at 70% of the grand total. However, the bid will be evaluated on Grand total only.
- The Bidder needs to make provision for all the costs required to run the solution for the entire duration of the contract.
- All relevant taxes would be considered for reimbursement on actuals as per CRUT's decision and prevailing Government Laws.

***The proposed requirements mentioned are indicative. Payment shall be made as per actual deployment based on rates obtained above. The above quoted unit rates must be applicable for entire contract period.**

10. Service Level Agreement

Objectives

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 CRUT. The Bidder shall monitor and maintain the stated service levels to provide quality service to CRUT.

- Implementation Service Levels
- Operation Service Levels
    - Infrastructure and Application Availability & Performance Service Levels
    - Handholding Support: Application Support Service Levels
    - Help Desk Service Levels

SLA Management & Monitoring Tool

The Bidder would have to establish a SLA Monitoring Tool which would undertake enterprise wide proactive monitoring and management. This system would enable proactive monitoring and reporting of any and every issue faces in the enterprise. The solution would communicate with the IT assets using SNMP or equivalent technology. This solution being very critical would be setup in a high available mode. The EMS system shall be able to record and report all the SLAs mentioned in the Service Level Agreement.

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 CRUT.
- 18x7 shall mean hours between 5 AM – 11 PM on all working days excluding Public Holidays or any other Holidays observed by CRUT.
- "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 CRUT.
- "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 CRUT 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 CRUT 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 5:00 AM to 11.00 PM on all working days. The Bidder however recognizes the fact that CRUT offices will require to work beyond the business hours on need basis.
- "Non-Business Hours" shall mean hours excluding "Business Hours".

Commencement and Duration of SLA

This SLA shall commence on the date of signing of Agreement or issue of Work Order by CRUT 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 5 years after "Go-live" of the Project.

Interpretation & General Instructions

- "Non-Business Hours" shall mean hours excluding "Business Hours".
- Bidder shall provide automated tool to monitor and report all the SLAs.
- 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 on a monthly basis for the purpose of Service Level reporting. An "Availability and Performance Report" will be provided by the Bidder on monthly basis in the CRUT suggested format and a review shall be conducted based on this report. A monthly Availability and Performance Report shall be provided to the CRUT 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. CRUT 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 CRUT and Bidder. Changes to the SLA may be required at other times to include new systems, change in operating hours, etc.

- Any and all changes to the SLA will be initiated in writing between CRUT and the Bidder. The Service levels here are considered to be standard for CRUT 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.
- Following tables outlines the key service level requirements for the system, which needs be ensured by the Bidder during the operations and maintenance period. These requirements shall be strictly imposed and either CRUT 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.

Implementation Service Level

- Parameters: The SLA parameters for the implementation stage would be directly related to the delivery timelines of the deliverables as mentioned in the Clause 6 of this RFP. 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 in the matrix in the Clause 6 of this RFP
- Penalty Value: For delay of every week in completion & submission of the deliverable, the MSI/Bidder would be charged with a penalty as follows;

Delay (Weeks)	Penalty % on the respective Payment milestone value
1	2%
2	5%
3 or more	2% for each week of delay

- 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/implementation phase, CRUT reserves the right to invoke the termination clause.
- Delay of every week would also account in increase of additional 2 weeks in the maintenance period which will be over and above the maintenance period of 5 years. This duration would be accounted without incurring any charges to CRUT.

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 CRUT. CRUT 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 reports, etc., as appropriate to be provided by the Bidder on a quarterly basis, in the formats as required by CRUT.

Sr. No	Parameter	Measurement of SLAs
1	Infrastructure Related SLAs	SLA Management and Monitoring Tool
2	ITMS 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 has to provision for the required tools to measure the SLA parameters. CRUT reserves the right to appoint Third Party for the audits. Audits will normally be done on regular basis or as required by CRUT and will be performed by CRUT or CRUT appointed third party agencies. Bidder shall make provision that requisite permission is given to the Third-Party Agency for carrying out the audit process on regular basis.

Violations and Associated Penalties

The framework for Penalties, as a result 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 Monthly Bills/Invoices, further to be paid in quarterly payments to the Bidder.
- Penalties applicable for each of the medium severity (M) violations is half percentage (0.5%) of respective Monthly Bills/Invoices, further to be paid in quarterly payments to the Bidder.

- Penalties applicable for each of the low severity (L) violations are Quarter percentage (0.25%) of respective Monthly Bills/Invoices, further to be paid in quarterly payments 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 2% of respective Monthly Bills/Invoices, further to be paid in quarterly payments to the Bidder. Penalty 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 1% of respective Monthly Bills/Invoices, further to be paid in quarterly payments to the Bidder. Penalty 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 0.5% of respective Monthly Bills/Invoices, further to be paid in quarterly payments to the Bidder. Penalty 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 CRUT shall have the right to encash the Performance Bank Guarantee or terminate the contract or both.

Operations and Maintenance

Production ITMS Systems

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

Non-ITMS 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 CRUT's ability to serve its user units, to perform critical CRUT's office functions.
- Non-Production ITMS 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 on a monthly basis and measured on a quarterly basis.

For detailed qualifications of the Breach in Supply of Technical Manpower please refer end of this section.

SLA for AFCS

Sr. No.	Service Level Description	Measuring Duration	Severity	Baseline minimum	Lower Performance	Measured by	Penalty Category
1	Availability of ETMs. If GPS/OBU/Any Hardware failure, then bidder should inform and report the same with Operation in charge/Command Centre within 2 Hrs.	Daily	M	99.90%	99% -to-99.90%	Network Monitoring/ Device health Monitoring report SLA Management & Monitoring Tool	M
2	AFCS Central System Availability	Monthly	H	>99.9%	99% -to-99.90%	SLA Management & Monitoring Tool	H
3	E-Ticketing & M-Ticketing Availability	Monthly	H	>99.9%	99% -to-99.90%	SLA Management & Monitoring Tool	H
4	Reliable without any loss of data, Seamless connectivity when moving {GPRS Network}	Monthly	H	>97%	95% -to-96.99%	SLA Management & Monitoring Tool	H
5	Each ETM Unit should ensure maximum 5 second despatch time for tickets	Monthly	H	>99.9%	99% -to-99.90%	SLA Management & Monitoring Tool	H
6	Replacement Time of Malfunction Unit	Daily	M	1 day	2 day	SLA Management & Monitoring Tool	M

SLA for AVLS

Sr. No.	Service Level Description	Measuring Duration	Severity	Baseline minimum	Lower Performance	Measured by	Penalty Category
1	Availability of Operational Vehicle Mountable Units. If GPS/OBU/Any Hardware failure, then bidder should inform and report the same with Operation in charge/Command Centre within 2 Hrs.	Daily	M	99.90%	99% -to- 99.90%	Network Monitoring/ Device health Monitoring report SLA Management & Monitoring Tool	M
2	AVLS Central System Availability	Monthly	H	>99.9%	99% -to- 99.90%	SLA Management & Monitoring Tool	H
3	Reliable without any loss of data, Seamless connectivity when moving between Bus Stops {GPRS Network}	Monthly	H	>97%	95% -to- 96.99%	SLA Management & Monitoring Tool	H
4	Each AVLS Unit should ensure maximum 10 second update time for vehicle location	Monthly	H	>97%	95% -to- 96.99%	SLA Management & Monitoring Tool	H
5	Replacement Time of Malfunction AVLS Unit	Daily	M	1 day	2 day	SLA Management & Monitoring Tool	M

SLA for PIS

Sr. No.	Service Level Description	Measuring Duration	Severity	Measurement		Measured by	Penalty Category
				Baseline Minimum	Lower Performance		
1	Passenger Information (service) displays shall be available for all passengers to view	Daily	M	> 97%	97% -to- 95%	Network Monitoring/ Device health Monitoring	M

	without delay in the frequency mentioned.					report SLA Management & Monitoring Tool	
2	Accuracy of forecast arrival at bus- stops (ETA Accuracy from AVLS System)	Daily	M	99%	99%-98 %	Network Monitoring/ Device health Monitoring report SLA Management & Monitoring Tool	M
3	Screen refresh across all PIS interfaces such as LED screens etc.	Daily	M	< 10 seconds	> 10 to < 20 sec	Network Monitoring/ Device health Monitoring report SLA Management & Monitoring Tool	M
4	Connectivity availability over Data card/BB	Daily	M	98%	98% to 90%	Network Monitoring/ Device health Monitoring report SLA Management & Monitoring Tool	M
5	PIS Server availability and On time synchronization of data from the server	Daily	H	< 10 sec	>10 & <30 sec	Network Monitoring/ Device health Monitoring report SLA Management &	H

						Monitoring Tool	
6	Display of Additional Text messages (Advertisements/free texts)	Weekly	M	100%	99.90%-95 %	Network Monitoring/ Device health Monitoring report SLA Management & Monitoring Tool	M
7	Correctness of Display fields - Line number & Destination, Departure Time (absolute/relative), Via-destination,	Daily	L	100%	99.90%-95 %	Network Monitoring/ Device health Monitoring report SLA Management & Monitoring Tool	L

SLA for Web Application

Sr. No.	Service Level Description	Measuring Duration	Severity	Measurement		Measured by	Penalty Category
				Baseline Minimum	Lower Performance		
1	Report Generation Time	Daily	M	<10 sec	30 to 90 sec	SLA Management & Monitoring Tool	M
2	Total Application Availability	Monthly	H	>99.90 %	99% -to-99.90%		H
3	Grievance and Complaints settlement	Monthly	H	< 7 Days	08 to 12 days		H
4	Client Access-24*7*365	Daily	H	99.90%	99.89% to 98%		H
5	Predetermined Report (Excepted Reports) Generations	Daily	M	< 7 Secs	08 to 20 sec		M
6	Query based Report generations	Daily	M	< 15 Secs	16 to 30 sec		M
7	Response time for data input after	Daily	H	< 5 sec	06 to 20 sec		H

	pressing enter (save) key to display a response.						
8	Response time for on-line inquiry	Daily	L	< 5 sec	06 to 20 sec		L

SLA for Mobile Application

Sr. No.	Service Level Description	Measuring Duration	Severity	Measurement		Measured BY	Penalty Category
				Baseline Minimum	Lower Performance		
1	Availability of mobile APP developed for commuters, conductors, inspectors and Top Management	Daily	H	100%	99.90%-95 %	SLA Management & Monitoring Tool	H
2	Instances of inaccurate information shared in mobile APP	Daily	L	0	Up to 2 Instances		L

SLA for DC (on cloud)

Measurement							
Sl.	Service Level Description	Measuring Duration	Severity	Baseline Minimum	Lower Performance	Measured BY	Penalty Category
1	IT Infrastructure for production environment should be designed in such a way that the infrastructure shall be made available % without single point of failure.	Monthly	H	99.50%	99.49% to 97%	SLA Management & Monitoring Tool	H
2	The system shall be operational, reliable, and available for business processes and mission-critical operations	Monthly	H	24*7*365	Anything below Baseline		H

3	CPU utilization must not cross beyond % at any time of processing	Monthly	H	75%	76% to 80%		H
4	Resumption of online ITMS services (Per Event)	Monthly	M	<45 min	45min to 60 min		M
5	Website uptime with all the features	Monthly	H	99%	99% to 98%		H
7	Point to Point (P2P) Communication	Monthly	H	98%	98% to 90%		H
8	ITMS Application Availability	Daily	H	99%	99%-98%		H
16	Availability of systems at Data Centre	Daily	H	99%	98.99% to 95%		H
19	Availability of agreed services over the internet	Daily	M	100%	99.99% to 95%		M
20	Network availability	Daily	H	99%	98.99% to 98%		H
21	Network Latency Average of (Milliseconds/Month)	Monthly	H	> 75	<75% to 72%		H
24	Roll out of latest anti-virus definition file on work station and server being made available by bidder	Quarterly	H	98%	98% to 96%		H
25	Roll out of latest updated patches/fixes, version upgrades	Quarterly	M	98%	98% to 96%		M
27	System Handling capacity for 25% additional load	Monthly	H	99%	99%to97%		H

SLA for Helpdesk

Sr. No.	Parameter	Formula	Baseline	Penalty	Example	Measurement

1	Operators availability: Average availability time of all operators	(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	100%	0.1% of quarterly pay-out 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 bill	MIS reports generated from the system deployed, maintained and operated by the MSI at the Helpdesk

Note: It is to be noted that if the performance for any of the SLAs during the contract goes below "Lower Performance" for consecutive three times then CRUT shall have the right to encash the Performance Bank Guarantee or terminate the contract or both.

11. Payment Terms:

Capex		
Software Payment		
1	**Development of ITMS Solution**	
	1) Completion of FRS for Package 1 & 2	5% of Table 1B
	2) Completion of SRS & SDD for Package 1 & 2	5% of Table 1B
	3) Development and Deployment of ITMS Application (Package-1)	30% of Table 1B
	4) Development and Deployment of ITMS Application (Package-2)	30% of Table 1B
2	**Project Completion and Successfully Running of ITMS solution:**	
	User Acceptance Testing	10% of Table 1B
	Go-Live	30% of Table 1B
	Stabilization post go-live period of 6 months	10% of Table 1B
	Note: The balance 10% of the of Capex/Table 1B for Software would be paid to the bidder/the lead bidder (in case of consortium) proportionately over the operation and maintenance period on Quarterly basis, Post Go-Live. The Billing period of Hosting & maintenance Cost would begin after Go-Live.	
Sr. No.	**Procurement, Installation and Testing of Hardware**	**Payment proportions (Hardware Cost)**
1	Procurement and Supply of Hardware	30% of Table 1A
2	Installation and Testing and Go-live of entire ITMS system.	50% of Table 1A
3	Stabilization post go-live period of 6 months	10% of Table 1A
	Note: The balance 10% of the Capex/Table 1A for Hardware would be paid to the bidder proportionately over the operation and maintenance period on Quarterly basis, Post Go Live. The Billing period of Hosting & maintenance Cost would begin after Go-Live.	
Opex		
Sr. No.	**Operation & Maintenance:**	**Payment proportions of invoiced amount of Table 1C**

1	**Annual Maintenance cost of the Hardware solution supplied with ITMS** Includes product upgrades and maintenance for a period of 5 years along with dedicated Manpower support. The maintenance period would commence Post- Go-Live	Quarterly Basis of with quarterly Progress Report at the end of the quarter
2	**Annual maintenance cost of the cloud hosted ITMS solution with onsite manpower support** Includes hosting support and dedicated manpower support for application maintenance for a period of 5 years. The maintenance period would commence Post- Go-Live	Quarterly Basis of with quarterly Progress Report at the end of the quarter

Note: The ITMS service provider 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 CRUT.

12. Exit Management

In order to align both the parties on transition modalities, the Bidder 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 CRUT level to effectively maintain the project after contract ending.
- Training and handholding of CRUT Staff or designated officers for maintenance of project after contract ending.
- Provide backup of all data associated with CRUT Integrated/Intelligent Transport Management System in format as required/specified by CRUT.
- CRUT will start preparation for transition accordingly.
- Source code of all system functionalities, user credentials, APIs (for Mobile & Web applications), SIM Number, Device IMEI Number, Hardware Port Access (with SOPs) and any other documents should be handed over CRUT with written acknowledgement.
- The Bidder need to submit all the documents in Hardcopy & Digital Form with Cloud and Local Devices (Hard Drive)

13. General Conditions of Contract

General Guidelines

- The system of recording, measurements and payments will be based on the CRUT in vogue.
- It is presumed that the Bidder has carefully studied standard, specification of the individual items and all condition before estimated rates are quoted by them.
- Special provisions in the detailed specifications or wording of any item shall give precedence over the corresponding contract provisions, if any. In case of any contradictions in the specifications, the interpretation and decision of the IT in- charge shall be final and binding.
- If the Bidder has any doubts, whatsoever, as to the contents of the contract he is deemed to having good time i.e., before submitting his tender, get his doubts clarified. Once the tender is submitted by Bidder, the matter will be decided according to the tender evaluation specified in the RFP.

Interpretation

In this Contract unless a contrary intention is evident:

- The clause headings are for convenient reference only and do not form part of this Contract;
- Unless otherwise specified a reference to a clause number is a reference to all of its sub-clauses;
- Unless otherwise specified a reference to a clause, sub-clause or section is a reference to a clause, sub- clause or section of this Contract including any amendments or modifications to the same from time to time;
- A word in the singular includes the plural and a word in the plural includes the singular;
- A word importing a gender includes any other gender;
- A reference to a person includes a partnership and a body corporate;
- A reference to legislation includes legislation repealing, replacing or amending that legislation;
- Where a word or phrase is given a meaning, it includes the appropriate grammatical forms of that word or phrase which have corresponding meanings.
- In the event of an inconsistency between the terms of this Contract and the Tender and the Bid, the terms hereof shall prevail.

Key Performance Measurements

- Unless specified by the CRUT to the contrary, the Bidder shall implement the infrastructure, perform the Services and carry out the Scope of Work in accordance with the terms of this Contract, Scope of Work and the Service Specifications as laid down under Service Level Agreement.
- If the Contract/Service Specification include more than one document, then unless the CRUT specifies to the contrary, the later in time shall prevail over a document of earlier date to the extent of any inconsistency.

Commencement &Progress

The Bidder shall commence the performance of its obligations in a manner as specified in the Scope of Work.

- The Bidder shall proceed to carry out the activities / services with diligence and expedition in accordance with any stipulation as to the time, manner, mode, and method of execution contained in this Contract.
- The Bidder shall be responsible for and shall ensure that all activities/ services are performed in accordance with the Contract, Scope of Work and that the Bidder's Team complies with such specifications and all other standards, terms and other stipulations/conditions set out hereunder.
- The Bidder shall perform the activities / services and carry out its obligations under the Contract with due diligence, efficiency and economy, in accordance with generally accepted techniques and practices used in the industry and with professional engineering and consulting standards recognized by international professional bodies and shall observe sound management, engineering and security practices. It shall employ appropriate advanced technology and engineering practices and safe and effective equipment, machinery, material and methods.
- The Bidder shall always act, in respect of any matter relating to this Contract, as faithful advisors to the CRUT and shall, at all times, support and safeguard the CRUT's legitimate interests in any dealings with Third parties.

Trademarks, Publicity

Neither Party may use the trademarks of the other Party without the prior written consent of the other Party. Neither Party shall publish nor did permitted to be publish either along with 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.

Events of default by the Bidder

The failure on the part of the Bidder to perform any of its obligations or comply with any of the terms of this Contract shall constitute an Event of Default on the part of the Bidder. The events of default as mentioned above may include inter-alia of the following:

- When the Bidder does not adhere to 'Go-Live' in the committed timeline of T+4 months plus another 2 months beyond that in spite of a written notice from CRUT
- When there is a critical breach on the SLAs and even after 2 months of CRUT providing a written notice to the Bidder, the critical breach has not been rectified
- The Bidder's Team has failed to demonstrate or sustain any representation or warranty made by it in this Contract, with respect to any of the terms of its Bid, the Tender and this Contract.
- There is a proceeding for bankruptcy, insolvency, winding up or there is an appointment of receiver, liquidator, assignee, or similar official against or in relation to the Bidder.

- The Bidder's team has failed to comply with or is in breach or contravention of any applicable laws.
- The Bidder's team are involved in fraud/willful misconduct.

Consequences of Default

Where an Event of Default subsists or remains uncured then CRUT shall be entitled to:

- Impose any such obligations and conditions and issue any clarifications as may be necessary to inter alia ensure smooth continuation of project and the Services which the Bidder shall be obliged to comply with. The Bidder shall in addition take all available steps to minimize loss resulting from such event of default.
- Where there has been an occurrence of such defaults inter alia as stated above, the CRUT shall issue a notice of default to the Bidder, setting out specific defaults / deviances / omissions / non-compliances / non-performances and providing a notice of Sixty (60) days to enable such defaulting party to remedy the default committed.

Data Ownership

All the data created as the part of the project would be owned by CRUT and Bidder. Successful Bidder shall take utmost care in maintaining security, confidentiality and backup of this data. The successful Bidder, however, has the right to use the data to fulfil its obligations under this contract and otherwise to improve CRUTs operations, but cannot use it for other purposes.

Other Conditions

CRUT will provide the details of all the existing transit vehicles, public transport network, bus stops, routes, fares and other necessary information.

Indemnity

The Bidder shall indemnify CRUT against the all actions, suits, claims, damages (damages by bus crew or staff in mishandling, theft etc. will be the responsibility of CRUT) and demands brought or made against it in respect of anything done or omitted to be done by the Bidder in the execution of or in the connection with the work of this Contract and against loss or damage to CRUT in consequences of any action or suit being brought against the Bidder anything done or omitted to be done in execution of the work of this contract.

Jurisdiction of Courts

In case of any claim, dispute or difference rising in respect of the contract, the case of action there of shall be deemed to have arisen in Odisha and all legal proceedings in respect of any such claim, dispute or difference shall be instituted in competent courting the city of Bhubaneswar only

Mutual Settlement

Settlement of Dispute: If the Parties fail to resolve, such a dispute or difference by mutual consent, within 15 (fifteen) days of its arising, then the dispute in the first instance be referred to the Managing Director (CRUT), who shall provide its written decision within a period of 15 (fifteen) days of the dispute being referred to it by either Party.

Disputes and Arbitration

Disputes (if any) raised out of contract are subject to jurisdiction of civil court of Bhubaneswar only.

Governing law and Jurisdiction

The Contract shall be interpreted in accordance with the laws of India and courts at Odisha shall have the exclusive jurisdiction in relation to this Contract.

Extension of timelines

As soon as it is apparent that the Contract dates cannot be adhered to, an application shall be sent by Bidder to the CRUT. If failure, on the part of Bidder, to complete scope of work in proper time shall have arisen from any cause which the CRUT may admit as reasonable ground for an extension of the time, CRUT may allow such additional time as it considers to be justified by circumstances.

Termination

If the Bidder fails to carry out any obligation under the Contract, CRUT may notice the bidder to rectify the failure and to remedy it within a specified reasonable time.

CRUT is entitled to terminate the Contractor a portion or part of the work thereof with a written notice of 60 days:

- If the Bidder fails to complete the entire work before the scheduled completion date or the extended date, the CRUT may without prejudice to any other right or remedy available to the CRUT;

- The Bidder has insolvency, receivership, reorganization, bankruptcy, or proceedings of a similar nature brought against it and the proceedings are not dismissed or effectively stayed within 30 (thirty) days of such commencement;
- If the Bidder does not maintain a valid instrument of Performance Security (and additional performance security, if any), as prescribed;
- If any of the default points covered under 'Events of Default by ITMS / Bidder' comes into existence or happens as per the respective clause CRUT reserves right to terminate the contract at any time, if any of the RFP clauses are not implemented and non-adherence of implementation to the timeline.
- Bidder shall be entitled to terminate the Contract with a written notice of 90 days:

Force Majeure

For the purpose of this RFP the expression "Force Majeure" or "Force Majeure Event" includes any act, event or circumstance, or combination of acts, events or circumstances, which may affect the affected Party's performance of its obligations pursuant to the terms of this Contract, but only if and to the extent that such acts, events or circumstances are not within the affected Party's reasonable control, were not reasonably foreseeable and could not have been prevented or overcome by the affected Party through the exercise of reason able skill or care.

Any act, event, circumstance or combination thereof meeting the description of Force Majeure that has the same effect upon the performance of the Bidder which directly, materially and adversely affects the performance by CRUT or the Bidder of its obligations in whole or in part under this Contract shall constitute Force Majeure with respect to the CRUT or the Bidder respectively.

The Force Majeure Event shall comprise the acts, events and circumstances, such as

- act of war, invasion, armed conflict or act of foreign enemy, blockade, embargo, revolution, riot insurrection, civil commotion, act of terrorism or sabotage, in each case occurring inside or directly involving India;
- strikes or lockouts occurring within India or at the Site as part of a nation-wide, industry, wide or state-wide strike or local strike, or lock out (excluding such events which are Site specific and attributable to the Bidder);
- radioactive contamination or ionizing radiation or chemical contamination specifically affecting the Facility or resulting from another Force Majeure Event;
- Flood, Cyclone, Tsunami, Lightning, Earthquake, Drought, Storm, Pandemic, Epidemics, Lockdown/Shutdown Restrictions, Quarantine Restrictions;
- any action by competent governmental instrumentality having jurisdiction over the Project, CRUT or the Bidder resulting in a loss of access to the Site;
- an act of God
- any other act or event or circumstance of an analogous nature.
- any state/national govt order interrupting day to day operations or any other extreme effect of the natural elements

Exceptions to Force Majeure

Notwithstanding the foregoing, Force Majeure shall not include:

- any delay, default or failure (direct or indirect) by the Bidder in any agreement entered by it; and
- any act, event, or occurrence resulting in financial hardship, including any delay or rejection of an insurance claim, shall not constitute a Force Majeure Event.

Excused Performance

If either Party is prevented from rendering performance of its obligations, whether wholly or partially under this Contract for reasons of a Force Majeure Event, then that Party will be excused from the performance so affected by the Force Majeure Event to the extent so affected provided that:

- The affected Party gives the other Party written notice of the occurrence of the Force Majeure Event as soon as practicable and in any event within 15 (fifteen) Days from the date of occurrence of the Force Majeure Event, giving full particulars of such occurrence, including an estimation of its expected duration, impact on the performance of such Party's obligations here under, and thereafter continues to furnish there to timely regular reports with respect to continuation of the Force Majeure Event and measures which the affected Party has taken or proposes to take to mitigate the impact of the Force Majeure Event and to resume performance of such of its obligations

affected thereby and the Completion Date shall be suitably extended.

- The suspension of performance shall be of no greater scope and of no longer duration than is reasonably required by the Force Majeure Event.
- Upon the occurrence of any circumstances of Force Majeure Event, the Bidder shall use all reasonable endeavors to continue to perform its obligations under the Contract and to minimize the adverse effects of such circumstances. The Bidder shall also use all reasonable means and best endeavors to ensure that the loss caused by the Force Majeure Event is minimized as far as possible.
- An event of Force Majeure does not relieve a Party from liability for an obligation which arose before the occurrence of that event.

Effect of Force Majeure Event

Neither CRUT nor the Bidder shall be considered in default or in contractual breach to the extent that performance of obligations is prevented by a Force Majeure Event, which arises after the Effective Date. An extension of time to the Construction Date shall be agreed upon by the Parties, provided the Bidder proves to CRUT that;

- The execution of Works is actually and necessarily delayed by an Force Majeure Event; and
- The effect of such Force Majeure Event could not have been prevented or avoided or removed despite exercise of reasonable due diligence whether before, after or during the Force Majeure Event
- Also, in the event of Force Majeure, Bidder agrees to CRUT deferring the payments for the Force Majeure period provided CRUT agrees to pay the deferred amount immediately after the Force Majeure period is over.

14. Formats for Proposal

Pre-Qualification Cover Letter

(To be submitted on the Letterhead of the responding firm) Date: dd/mm/yyyy
To

Managing Director
Capital Region Urban Transport
Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar
Bhubaneswar, Odisha (INDIA), Pin- 751007

Sub: RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha.

Ref: RFP Notification number -

Dear Sir,

Having examined the RFP, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to provide the professional services as required and outlined in the "RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha"

We attach hereto the Pre- Qualification response as required by the RFP, which constitutes our proposal. We undertake, if our proposal is accepted, to adhere to the implementation plan (Project schedule) for providing Professional Services in "**RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha**", put forward in RFP or such adjusted plan as may subsequently be mutually agreed between us and CRUT or its appointed representatives.

If our proposal is accepted, we will obtain a Performance Security Deposit (Bank Guarantee) issued by a nationalized bank in India, for a sum of equivalent to 10% of the contract value for the due performance of the Contract.
We agree for unconditional acceptance of all the terms and conditions set out in the RFP document and also agree to abide by this tender response for a period of 180 days from the date of submission of Bid and it shall remain binding upon us with full force and virtue, until

within this period a formal contract is prepared and executed, this tender response, together with your written acceptance thereof in your notification of award, shall constitute a binding contract between us and CRUT.

We confirm that the information contained in this proposal or any part thereof, including its exhibits, schedules, and other documents and instruments delivered or to be delivered to CRUT is true, accurate, and complete. This proposal includes all information necessary to ensure that the statements therein do not in whole or in part mislead CRUT as to any material fact.

We agree that you are not bound to accept any tender response you may receive. We also agree that you reserve the right in absolute sense to reject all or any of the products/ services specified in the tender response.

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

Date:

(Signature) (Name)

(In the capacity of) [Seal / Stamp of Bidder] Witness Signature:

Witness Name:

Witness Address:

CERTIFICATE AS TO AUTHORISED SIGNATORIES

I_____, the Company Secretary of_____, certify that_____who signed the above Bid is authorized to do so and bind the Company by authority of its board/ governing body.

Date:

Signature:

(Company Seal) (Name)

Format to share Bidder's and Bidding Firms Particulars

The Table below provides the format in which general information about the Bidder and Sub-Consultants must be furnished.

S No	Information	Details
1.	Name of Bidding firm	
2.	Address and contact details of Bidding firm	
3.	Firm Registration Number and Year of Registration	
4.	Web Site Address	
5.	Status of Company (Public Ltd., Pvt. Ltd., etc.)	
6.	Company's Permanent Account Number (PAN) & GST	
7.	Company's Revenue for the last 3 years (Year wise)	
8.	Name, Designation and Address of the contact person to whom all references shall be made regarding this RFP:	
9.	Telephone number of contact person:	
10.	Mobile number of contact person:	
11.	Fax number of contact person:	
12.	E-mail address of contact person:	
13.	Sub-Contracting Company Name (if any)	
14.	Mailing Address and contact details of Bidding firm:	
15.	Web Site Address	
16.	Firm Registration Number and Year of Registration	
17.	Status of Company (Public Ltd., Pvt. Ltd., etc.)	
18.	Name, Designation and Address of the contact person to whom all references shall be made regarding this RFP:	

Please submit the relevant proofs for all the details mentioned above along with your Bid response
Authorized Signatory Name
Seal

Technical Proposal Bid Cover Letter

(To be submitted on the Letterhead of the responding firm) Date: dd/mm/yyyy
To

Managing Director
Capital Region Urban Transport
Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar
Bhubaneswar, Odisha (INDIA), Pin- 751007

Sub: RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha.

Ref: RFP Notification number -

Dear Sir,

Having examined the RFP, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to provide the professional services as required and outlined in the "RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha"
We attach hereto the technical response as required by the RFP, which constitutes our proposal. We undertake, if our proposal is accepted, to adhere to the implementation plan (Project schedule) for providing Professional Services in "RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha" put forward in RFP or such adjusted plan as may subsequently be mutually agreed between us and CRUT or its appointed representatives.
If our proposal is accepted, we will obtain a Performance Security Deposit (Bank Guarantee) issued by a nationalized bank in India, for a sum of equivalent to 10% of the contract value for the due performance of the Contract.
We agree for unconditional acceptance of all the terms and conditions set out in the RFP document and also agree to abide by this tender response for a period of 180 days from the date of submission of Bid and it shall remain binding upon us with full force and virtue, until within this period a formal contract is prepared and executed, this tender response, together with your written acceptance thereof in your notification of award, shall constitute a binding contract between us and CRUT.

We confirm that the information contained in this proposal or any part thereof, including its exhibits, schedules, and other documents and instruments delivered or to be delivered to CRUT is true, accurate, and complete. This proposal includes all information necessary to ensure that the statements therein do not in whole or in part mislead CRUT as to any material fact.

We agree that you are not bound to accept any tender response you may receive. We also agree that you reserve the right in absolute sense to reject all or any of the products/ services specified in the tender response.

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

Date:
(Signature) (Name)
(In the capacity of) [Seal / Stamp of Bidder] Witness Signature:
Witness Name:
Witness Address:

CERTIFICATE AS TO AUTHORISED SIGNATORIES

I_____, the Company Secretary of_____,
certify that_____who signed the above Bidis authorized to do so and bind the Company by authority of its board/ governing body.
Date:
Signature:
(Company Seal) (Name)

Format of sending pre-bid queries

All queries for the pre-bid meeting needs to be submitted in the following format (both soft copy and hard copy) as mentioned in section "Key Events and Dates"

Ref: RFP Notification number:

Bidder**'s Request for Clarification**				
Name and complete official address of Organization submitting query / request for clarification			Telephone, Fax and E-mail of the organization Tel: Fax: Email:	
Sr. No.	**Clause No.**	**Page No.**	**Content of RFP Requiring Clarification**	**Change Requested/ Clarification required**
1				
2				

Signature:

Name of the Authorized signatory: Company seal:
Date and Stamped

Financial Proposal Cover Letter

(To be submitted on the Letterhead of the Bidder)
Date: dd/mm/yyyy

To,

Managing Director
Capital Region Urban Transport
Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar
Bhubaneswar, Odisha (INDIA), Pin- 751007

Subject: RFP for selection of Integrated Transport System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha

Ref:
Dear Sir,

We, the undersigned, offer to provide the services for "RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha" in accordance with your Request for Proposal dated [Insert Date] and our Technical Proposal.

Our Financial quote is INR XXXXXX (IINR XXXXX in Words …….) inclusive of all taxes and duties, as per Table 1 financial format provided for the RFP for selection of Integrated Transport System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha

We understand that CRUT may award entire scope or part of scope, mentioned in RFP, as CRUT deems fit. CRUT does not guarantee work order of any line item in part or whole or volume for the particular line items. CRUT reserves the right to increase or decrease the Quantity and use the Unite price for procurement of line items as and when required during the period of contract.

We understand that The Unit prices mentioned would be valid for the entire period of contract and the payment shall be made based on unit cost quoted for the particular item and on actual product or services and components is delivered, and further no extra cost shall be made in any account till the contract period. The Rates per unit and taxes to be given separately as per the financial format and the taxes shall be paid at actuals as per the prevailing rates by CRUT at the time of releasing the payments.

We understand that the bidder shall fill rates for all the items mentioned here. If any rate for any item is not mentioned then the bid will be rejected by CRUT. All the prices are to be entered in Indian Rupees ONLY. Any discrepancies in figures or words or calculation shall be adjusted and the lowest of the same would be considered for evaluation as well as execution of the project.

We understand that the Bidder needs to account for all Out-of-Pocket expenses due to Boarding, Traveling, Lodging and other related items for the entire period of contract.

We are aware that any conditional financial offer will be outright rejected by CRUT. Our Financial Proposal shall be binding upon us subject to the modifications resulting from Contract negotiations, up to expiration of the validity period of the Proposal (180 days) from the last date of submission of Bid.

We hereby declare that our Tender is made in good faith, without collusion or fraud and the information contained in the Tender is true and correct to the best of our knowledge and belief. We understand that our Tender is binding on us and that you are not bound to accept a Tender you receive. We confirm that deviations to the RFP are attached here with this commercial offer.

Yours sincerely,
Authorized Signature [In full and initials]: Name and Title of Signatory:
Date and Stamp of the signatory Name of Firm:

Financial Proposal Format

To,

Managing Director
Capital Region Urban Transport
Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar
Bhubaneswar, Odisha (INDIA), Pin- 751007

Subject: - Submission of financial proposal for "RFP for selection of Integrated Transport Management System (ITMS) partner for supply, installation, commissioning & integration along with 5 years of operation & maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha"

This table-1 should be consolidated from the "Grand Total" row from subsequent tables and the Grand Total will be used for Bid evaluation purposes.

Table-1:

Table-1: Consolidated Cost Summary		
Sr. No.	**Item wise Amount**	**Total Amount with Taxes**
1	**2**	**3**
Hardware Cost- Capex		
A	Supply, Installation & Integration cost of Hardware	**A (Table 1A)**
Software Cost-Capex		
B	Supply, Design, Development & Integration cost of Software	**B (Table 1B)**
Operation & Maintenance Cost- OPEX		
C	Operation & Maintenance Cost for a period of 5 Years	**C (Table 1C)**
Grand Total in Figures (A + B + C) **(This figure shall be used for evaluation of financial proposals)**		**GT**
Grand Total in Words (A + B + C) **(This figure shall be used for evaluation of financial proposals)**		**GT**

Table-1A: Supply, Installation & Integration cost of Hardware

A - Hardware Components							
Sr. No.	**Component**	**Qty**	**UOM**	**Unit Rate in INR**	**Total Amount Without Taxes (in INR)**	**Taxes**	**Total Amount With Taxes (in INR)**
A	**b**	**c**	**d**	**e**	**f=c*e**	**g**	**h=f+g**
1	**IN-BUS ITMS Solution Components**						
1.1	OBITMS Hardware for Buses with SIM card	50	Nos.				
1.2	Integration for OBITMS Hardware for E-Rickshaws	500	Nos.				
1.3	ETM/POS hardware for E-ticketing with SIM card	715	Nos.				
1.4	ETM Charging Ports inside buses	225	Nos.				
2	**BUS STATION & TERMINALS - ITMS Solution Components**						
2.1	Station PIS Solution board with Inbuilt controller & GPRS Module for communication with command centre	20	Nos.				
2.2	Terminal PIS Display with controller (LED TV) & GPRS Module for communication with command centre with IP-65 casing & mounting structure for outdoor mounting	2	Nos.				
2.3	ETM/POS hardware for E-ticketing at terminals	8	Nos.				
2.4	Smartcard Issuance Unit	8	Nos.				
2.5	ETM/POS Pigeon Case Charging Unit	8	Nos.				
2.6	IP Public Address System for Terminals	4	Set				
2.7	Emergency Call Button	16	Nos.				
2.8	GSM Router with 2 SIM cards	4	Set				
2.9	8 Port Industrial Grade Switch	4	Set				
3	**Depot - ITMS Solution Components (For Six Depots)**						
3.1	AFCS Workstation	20	Nos.				
3.2	Depot Manager Workstation	7	Nos.				
3.3	L2 Access Switch (24 Port)	6	Nos.				

3.4	CCTV with local 16 Channel NVR, 5 nos. 2MP IP CCTV Bullet Camera and 32" Monitor complete with keyboard and mouse	6	Set				
3.5	IP Public Address System for Terminals	6	Set				
3.6	Access Control System	6	Set				
3.7	Biometric Attendance System	6	Set				
3.8	Digital Clock	6	Nos.				
3.9	12U Racks	6	Nos.				
3.10	120 MBPS Broadband connection with routers from two different service providers	6	Set				
3.11	ETM/ POS Pigeon Case Charging Unit	6	Nos.				
3.12	Electrical work including all power points and accessories for ITMS equipment	6	Lot				
3.13	Local Networking Work including all equipment & accessories for ITMS equipment	6	Lot				
4	**Central Control Center (CCC) Infrastructure**						
4.1	3 x 3 Video Wall for ITMS	1	Set				
4.2	Furniture for CCC	1	Lot				
4.3	CCTV Surveillance Cameras with NVR	1	Set				
4.4	EPABX System with IVRS System	1	Set				
4.5	Biometric Reader with Retina/Face Scanner	1	Set				
4.6	Work Stations with two monitors	6	Nos.				
4.7	Firewall (UTM)	2	Nos.				
4.8	Internet Router	2	Nos.				
4.9	L3 Switch/Edge Router	2	Nos.				
4.10	L2 Access Switch (24 Port)	4	Nos.				
4.11	Master Clock System	1	Nos.				
4.12	Digital Clock	2	Nos.				
4.13	IP Public Address System	1	Lot				
4.14	Access Control System	1	Lot				
4.15	Biometric Attendance System	1	Lot				
4.16	UPS with 1 Hour of Backup	1	Lot				
4.17	42U Racks	1	Lot				
4.18	Internet Line (MPLS)	2	Nos.				
5	Any other Consumables as per solution requirement	1	Lot				
Sub Total-A							**A**

**Sub-Total (A) shall be reflected in Table: 1*

Table 1B: Supply, Design, Development & Integration cost of Software

B - Software Solution Components					

Sr. No.	Component	Qty	UOM	Unit Rate in INR	Total Amount Without Taxes (in INR)	Taxes	Total Amount With Taxes (in INR)
A	**B**	**c**	**d**	**e**	**f=c*e**	**g**	**h=f+g**
1	Automated Vehicle Tracking Software (AVLS)	1	Nos				
2	Incident Management Software	1	Nos				
3	PIS Management Software solution	1	Nos				
4	BI / MIS Reporting	1	Nos				
5	Mobile Application (IOS and Android Platform)	1	Nos				
6	GIS Map Platform	1	Nos				
7	Web Portal	1	Nos				
8	Vehicle Planning and Scheduling System	1	Nos				
9	Depot Management Solution	1	Nos				
10	AFCS Solution S/W including AFCS centralised S/W and HHT/ETM & POS Solution	1	Nos				
11	Integration with existing ITMS Third Party Hardware & Software	1	Lot				
Sub-Total (B)*							**B**

**Sub-Total (B) shall be reflected in Table: 1*

Table 1C: Operation & Maintenance Cost for a period of 5 Years

C # O & M - Software Hosting/Server Management & Connectivity for 5 Years							
Sr. No.	**Component**	**Qty**	**UOM**	**Unit Rate in INR**	**Total Amount Without Taxes (in INR)**	**Taxes**	**Total Amount With Taxes (in INR)**
A	**B**	**c**	**D**	**e**	**f=c*e**	**g**	**h=f+g**
1	DC & DR on Managed Cloud Services for 5 Years	1	Nos				
2	Manpower for CCC operations & support	1	Lumpsum				
3	AMC Charges for Hardware for a period of 5 years	1	Nos				
4	AMC Charges for Software for a period of 5 years (including all perpetual licenses)	1	Nos				
5	Any other charges as per solution requirement for a period of 5 years	1					
6	Standard Business Licenses of Office 365 services	15	No.s				
Sub-Total-C*							**C**

**Sub-Total (C) shall be reflected in Table: 1*

Signature of the Authorized Signatory

Name:

Company Name:

15 ANNEXURE

Annexure A: Format for Declaration by the Bidder/all members of consortium for not being Blacklisted /Debarred

(To be submitted on the Letterhead of the responding company)

Date: dd/mm/yyyy

To

Managing Director

Capital Region Urban Transport

Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar

Bhubaneswar, Odisha (INDIA), Pin- 751007

Subject: Declaration for not being debarred / black-listed by Central / any Government or PSU in India as on the date of submission of the bid

Ref: Tender Reference No:

Dear Sir,

I, authorized representative of_____, hereby solemnly confirm that the Company_____is not debarred /blacklisted by any Government or PSU for any reason as on last date of submission of the Bid. In the event of any deviation from the factual information/ declaration, CRUT, Government of Odisha reserves the right to reject the Bid or terminate the Contract without any compensation to the Company and forfeiture of Earnest Money Deposit and/or Security Deposit.

Thanking you,

Yours faithfully,

Signature of Authorized Signatory (with official seal) Date:

Name:

Designation:

Address:

Telephone &Fax:

E-mail address:

Annexure B: Performance Security - Bank Guarantee Format

Form of Bid Security (Bank Guarantee)

(To be stamped in accordance with the Stamp Act of the Country of Issuing Bank)

To

Managing Director

Capital Region Urban Transport

Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar

Bhubaneswar, Odisha (INDIA), Pin- 751007

Whereas, <<name of the supplier and address>> (hereinafter called "the Bidder") has undertaken, in pursuance of contract no. <Insert Contract No.> dated. <Date> to provide Implementation services for << Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha>> to CRUT (hereinafter called "the beneficiary")

And whereas it has been stipulated in the said contract that the Bidder shall furnish 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 office at <Address of Local Office> have agreed to give the supplier such a bank guarantee.

Now, therefore, we hereby affirm that we are guarantors and responsible to you, on behalf of the _____, up to a total of Rs. <Insert Value> (Rupees <Insert Value in Words> only) and we undertake to pay you, upon your first written demand declaring the supplier to be in default under the contract and without cavil or argument, any sum or sums within the limits of Rs. <Insert Value> (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 the Bidder 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 Bidder 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:

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

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

III. 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.

Dated_____Day of _____2018 For (Indicate the name of the Bank) _____

Annexure C: Non-Disclosure Agreement

[Company Letterhead]

This AGREEMENT (hereinafter called the "Agreement") is made on the [day] day of the month of [month], [year], between, Capital Region Urban Transport, (hereinafter called the "CRUT") and, on the other hand, [Name of the Bidder] (hereinafter called the "Bidder") having its registered office at [Address]

WHEREAS

1. The "CRUT" has issued a public notice inviting various organizations for provision of Selection of Operations Assistance Agency with Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha (hereinafter called the "Project") of the CRUT;
2. The Bidder, having represented to the "CRUT" that it is interested to bid for the proposed Project,
3. The CRUT and the Bidder agree as follows:

a) In connection with the "Project", the CRUT agrees to provide to the Bidder a detailed document on the Project vide the Request for Proposal document. The Request for Proposal contains details and information of the CRUT operations that are considered confidential.

b) The Bidder to whom this information (Request for Proposal) is disclosed shall –

i. hold such information in confidence with the same degree of care with which the Bidder protects its own confidential and proprietary information;
ii. restrict disclosure of the information solely to its employees, other member with a need to know such information and advice those persons of their obligations hereunder with respect to such information;
iii. use the information only as needed for the purpose of bidding for the Project;
iv. except for the purpose of bidding for the Project, not copy or otherwise duplicate such information or knowingly allow anyone else to copy or otherwise duplicate such information; and
v. undertake to document the number of copies it makes
vi. on completion of the bidding process and in case unsuccessful, promptly return to the CRUT, all information in a tangible form or destroy such information

4. The Bidder shall have no obligation to preserve the confidential or proprietary nature of any information which:

was previously known to the Bidder free of any obligation to keep it confidential at the time of its disclosure as evidenced by the Bidder's written records prepared prior to such disclosure; or is or becomes publicly known through no wrongful act of the Bidder; or is independently developed by an employee, agent or implementation agency of the Bidder not associated with the Project and who did not have any direct or indirect access to the information.

5. The Agreement shall apply to all information relating to the Project disclosed by the CRUT to the bidder.

6. CRUT will have the right to obtain an immediate injunction enjoining any breach of this Agreement, as well as the right to pursue any and all other rights and remedies available at law or in equity for such a breach.

7. CRUT reserves the right to share the information received from the bidder under the ambit of RTI Act.

8. Nothing contained in this Agreement shall be construed as granting or conferring rights of license or otherwise, to the Bidder, on any of the information. Notwithstanding the disclosure of any information by the CRUT to the Bidder, the CRUT shall retain title and all intellectual property and proprietary rights in the information. No license under any trademark, patent or copyright, or application for same that are now or thereafter may be obtained by the CRUT is either granted or implied by the conveying of information. The Bidder shall not alter or obliterate any trademark, trademark notice, copyright notice, confidentiality notice or any notice of any other proprietary right of the CRUT on any copy of the information, and shall reproduce any such mark or notice on all copies of such information.

9. This Agreement shall be effective from the date of signing of this agreement and shall continue perpetually.

10. Upon written demand of the CRUT, the Bidder shall (i) cease using the information, (ii) return the information and all copies, notes or extracts thereof to the CRUT forthwith after receipt of notice, and (iii) upon request of the CRUT, certify in writing that the Bidder has complied with the obligations set forth in this paragraph.

11. This Agreement constitutes the entire Agreement between the CRUT and the Bidder relating to the matters discussed herein and supersedes any and all prior oral discussions and/or written correspondence or agreements between the two parties. This Agreement may be amended or modified only with the mutual written consent of the parties. Neither this Agreement nor any right granted hereunder shall be assignable or otherwise transferable.

12. Confidential information is provided "As-Is". In no event shall the CRUT be liable for the accuracy or completeness of the confidential information.

13. This agreement shall benefit and be binding upon the CRUT and the Bidder and their respective subsidiaries, affiliate, successors and assigns.

14. This agreement shall be governed by and construed in accordance with the Indian laws.

For and on behalf of the Bidder

(Signature)

(Name of the authorized Signatory) Designation:

Date :

Time :

Seal :

Business Address

Annexure D: Declaration of Data Security

To,

Managing Director

Capital Region Urban Transport

Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar

Bhubaneswar, Odisha (INDIA), Pin- 751007

Dear Sir,

We..... who are established and reputable Bidder having office at..... do hereby certify that CRUT shall have absolute right on the digital data and output products processed / produced by us. We shall be responsible for security / safe custody of data during Implementation phase and Annual Maintenance Contract phase.

We also certify that the data will not be taken out of the CRUT's premises or cloud facility /hosting system or from application on any media. The original input data supplied to us by CRUT and output products processed / produced from input data will not be passed on to any other Service Provider or individual other than the authorized person of CRUT. We shall abide by all security and general instructions issued by CRUT from time to time.

We also agree that any data from our computer system will be deleted in the presence of CRUT official after completion of the project task.

Thanking you,

Yours faithfully,

For and on behalf of the Bidder

(Signature)

(Name of the authorized Signatory)

Designation :

Date :

Time :

Seal :

Business Address :

Annexure E: Power of Attorney for signing the Bid

Know by all men by these presents, We_____(Name of the Bidder and address of their registered office) do hereby constitute, appoint and authorize Mr. / Ms _____(name and residential address of Power of attorney holder) who is presently employed with us and holding the position of _____ as our Attorney, to do in our name and on our behalf, all such acts, deeds and things necessary in connection with or incidental to our Proposal for the "Request for Proposal for Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha" including signing and submission of all documents and providing information / responses to the CRUT, representing us in all matters before CRUT, and generally dealing with the CRUT in all matters in connection with our Proposal for the said Project.

We hereby agree to ratify all acts, deeds and things lawfully done by our said Attorney pursuant to this Power of Attorney and that all acts, deeds and things done by our aforesaid Attorney shall and shall always be deemed to have been done by us.

For_____ Name:

Designation:

Date:

Time:

Seal:

Business Address:

Accepted,

_____

(Signature) (Name, Title and Address of the Attorney)

Note:

- 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.
- The Power of Attorney shall be provided on Rs.100/- stamp paper.
- The Power of Attorney should be supported by a duly authorized resolution of the Board of Directors of the Bidder authorizing the person who is issuing this power of attorney on behalf of the Bidder.

Annexure F: Power of Attorney for Lead Member by the other Consortium Member

(On Non - Judicial Stamp paper of appropriate value to be purchased in the name of Consortium)

Know All Men by These Presents That We, the Members whose details are given hereunder have formed a Consortium and having our Registered Office(s)/ Head Office(s) at …….

(Hereinafter called the 'Consortium' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) do hereby constitute, nominate and appoint M/s. having its Registered/ Head Office at as our duly constituted lawful Attorney (hereinafter called "Lead Bidder") to exercise all or any of the powers for and on behalf of the CONSORTIUM to participate in Bid for_____, as per the scope of work stipulated therein for which Bids have been invited by the Capital Region Urban Transport (CRUT), to undertake the following acts:

i. To submit Bid, participate and correspond in respect of the aforesaid Bid on behalf of the "Consortium".
ii. To negotiate with CRUT the terms and conditions for award of the contract pursuant to the aforesaid bid and to sign the contract with the CRUT ("Contract") for and on behalf of the "CONSORTIUM".
iii. To do any other act or submit any document related to the above.
iv. To receive, accept and execute the Contract for and on behalf of the "Consortium".
v. To submit the performance security or additional performance security in the prescribed format and as per terms of the Contract.

It is clearly understood that the Lead Bidder shall ensure performance of the Contract and if either of the members fail to perform their respective portion of the Contract, the same shall be deemed to be a default by all the members.

We hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things lawfully 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

It is expressly understood that this power of attorney shall remain valid, binding and irrevocable till completion of the Contract period i.e.,_____from the date of execution of the Contract.

The consortium hereby agrees and undertakes to ratify and confirm all the whatsoever the said Lead Bidder quotes in the Bid, negotiates and signs the Contract with the CRUT and/or proposes to act on behalf of the Consortium by virtue of this Power of Attorney and the same shall bind the Consortium members as if done by itself.

In Witness Thereof, the members constituting the Consortium as aforesaid have executed these presents on this ……. day of two thousand seventeen.

For and on behalf of the member of the Consortium

1.....

……. (Signature)

(Name, Title and Address of the Attorney)

Notes:

1. The mode of execution of 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. Also, wherever required, the executant(s) should submit for verification the extract of the charter documents and documents such as a resolution / Power of attorney in favour of the Person executing this power of attorney for the delegation of power hereunder on behalf of the executant(s).

Annexure G: Consortium Agreement

Draft agreement executed by the members of the consortium
[On non-judicial stamp paper duly attested by notary public]

This agreement (Agreement) entered into this day of [Date] [Month] 201 at [Place] between _____(hereinafter referred to as "__") and having office at [Address], India, as Party of the First Part and_____(hereinafter referred as "__") and having office at [Address], as Party of the Second Part and_____(hereinafter referred as "_").

_____and_____are individually referred to as 'Party' and collectively as 'Parties'.

WHEREAS Capital Region Urban Transport (CRUT), has issued a Tender Document dated [Date] (TD) for Selection of partner for Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha ("hereinafter referred to as the "**Project**")

AND WHEREAS the Parties have had discussions for formation of a consortium for submitting the Bid for the Project and have reached an understanding on the following points with respect to each of the Parties' rights and obligations towards each other and their working relationship.

BASIS THE MUTUAL UNDERSTANDING OF THE PARTIES, IT IS HEREBY AGREED AND DECLARED AS FOLLOWS:

i. The purpose of this Agreement is to define the principles of collaboration among the Parties to:
    a. Jointly Bid for the "Project" as a Consortium.
    b. Sign contract with CRUT / case of award ("Contract").
    c. Provide and perform the supplies and services which would be ordered by CRUT pursuant to the Contract.
ii. This Agreement shall not be construed as establishing or giving effect to any legal entity. It shall relate solely towards CRUT for "Project" to be performed pursuant to the Contract and shall not extend to any other activities.
iii. The Parties shall be jointly and severally responsible and bound towards CRUT for the Project in accordance with the terms and conditions of the TD and Contract.
iv. (Name of Party) shall act as Lead Bidder of the Consortium.
    As such, it shall act as the coordinator of the Party's combined activities and shall carry out the following functions:

a. To ensure the technical, commercial and administrative co-ordination of the Project;
b. To lead the Contract negotiations with CRUT;
c. The Lead Bidder is authorized to receive instructions and shall assume responsibilities for and on behalf of all Parties; and
d. In case of an award, act as channel of communication between CRUT and the Parties for execution of the Contract.

v. The Parties shall carry out all responsibilities in terms of the Project:
---

vi. The broad roles and the responsibilities of each Party as per each member's field of expertise at each stage of the bidding shall be as below:
Party A: _____
Party B: _____

vii. The proposed administrative arrangements (organization chart) for the management and execution of the Project shall be as follows:
_____
_____

viii. The profit and loss sharing ratio shall be_____.

ix. The Parties agree that all the members of the Consortium shall be jointly and severally liable for all obligations in relation to the Contract until the completion of the Project in accordance with the Contract and also thereafter

x. The Parties affirm that they shall implement the Project in good faith and shall take all necessary steps to see the Project through expeditiously.

xi. That this Agreement shall be governed in accordance with the laws of India and courts in shall have exclusive jurisdiction to adjudicate disputes arising from the terms herein.

In witness whereof, the Parties affirm that the information provided is accurate and true and have caused this Agreement duly executed on the date and year above mentioned.

(Party of the first part) (Party of the second part) (Party of the third part)
Witness:

i._____ii_____iii_____ ____

Annexure H: Net worth Certificate

(On the letterhead of the Auditor/CA firm) Date: dd/mm/yyyy

To

Managing Director

Capital Region Urban Transport

Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar

Bhubaneswar, Odisha (INDIA), Pin- 751007

Dear Sir/Madam,

This is to certify that the Net worth as per books and records for the following financial years are as under.

Sl. No.	FY ending	Net worth (in Rs. Crs)

Yours Sincerely

Signature of the Auditor (with official seal) Name:

Designation:

Address:

Telephone & fax:

Email:

Annexure I: Annual Turnover of the Bidder (Turnover of lead Bidder in the Consortium)

(<< To be submitted by each member company is case of Consortium on company's letterhead>>

To

Managing Director

Capital Region Urban Transport

Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar

Bhubaneswar, Odisha (INDIA), Pin- 751007

Subject: Selection of partner for Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha (RFP No: Dated: / /)

Dear Sir/ Madam,

I have carefully gone through the Terms & Conditions contained in the RFP Document for Selection of partner for Supply, Installation, Commissioning & Integration along with 5 years of Operation & Maintenance of ITMS for public transport services managed by CRUT, Bhubaneswar, Odisha

I hereby declare that below are the details regarding Overall turnover over last 3 financial years for our organization as well as the turnover of the consortium members over last 3 financial years.

#	Details	FY 2016-17 (in Crores) (i)	FY 2017-18 (in Crores) (ii)	FY 2018-19 (in Crores) (iii)	Average Turnover [(i)+(ii) +(iii)/3]
	Overall Annual Turnover-Sole/Lead Bidder				

Annexure J: Contact Details of officials for future correspondence regarding the bid process- Lead Bidder and All Members of Consortium:

Details	Authorized Signatory	Secondary Contact
Name		
Title		
Company Address		
Mobile		
Fax		
Email Id		

I further certify that I am competent officer in my company to make this declaration. Yours Sincerely,

Signature of Authorized Signatory (with Official seal)

Annexure K: Format for Project Citation by the Bidder/any consortium member

Project Experience 1: The Bidder/The Consortium must use a single format for a single project. The details of projects executed by the Bidder/ any consortium member:

Name of the Project & Location	
Role of the Entity claiming experience for the Project	
Client's Name and Complete Address	
Narrative description of project, including no. of buses as sought in the Criteria	
Contract Value for the bidder (in INR)	
No. of buses, as applicable, where the relevant project component has been implemented as on the Proposal Due Date	
Date of Start of Project	
Date of Completion of Project	
Activities undertaken by Lead Member or consortium member	

Annexure L: Format for Pre-Qualification Checklist

Sl. #	RFP Criteria	Compliance (Yes/No)	Reference in the Pre-Qualification Criteria (Section & Page no.)

Annexure M: Format for Technical Evaluation Checklist

Sl. #	RFP Criteria	Compliance (Yes/No)	Reference in the Technical Evaluation Criteria (Section & Page no.)

Annexure N: Format of Resume

<table>
<tr><td>A</td><td colspan="5">Name of the Resource:</td></tr>
<tr><td>1.</td><td>Proposed position or role</td><td colspan="4"></td></tr>
<tr><td>2.</td><td>Date of Birth</td><td></td><td>Nationality</td><td colspan="2"></td></tr>
<tr><td rowspan="3">3.</td><td rowspan="3">Education</td><td>Qualification</td><td>Name of School or College or University</td><td>Degree Obtained</td><td>Year of Passing</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>4.</td><td>Total years of experience</td><td colspan="4"></td></tr>
<tr><td>5.</td><td>Areas of Expertise and no. of years of experience in this area</td><td colspan="4"></td></tr>
<tr><td>6.</td><td>Certifications and Trainings attended</td><td colspan="4"></td></tr>
<tr><td rowspan="5">7.</td><td rowspan="5">Employment Record</td><td>Employer</td><td>Position</td><td>From</td><td>To</td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td colspan="4">[Starting with present position and last 2 firms, list in reverse order, giving for each employment: dates of employment, name of employing organization, positions held.]</td></tr>
</table>

8.	Detailed Tasks Assigned	
9.	Roles & Responsibilities	

Project 1	
Name of assignment	
Year	
Location	
Employer	
Main project features	
Position held	
Activities performed	

Project 2	
Name of assignment	
Year	
Location	
Employer	
Main project features	
Position held	
Activities performed	

Annexure O: Manufacturers'/Producers' Authorization Form

(This form has to be provided by the OEMs of the hardware and software solutions proposed. This letter should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to bind the manufacturer.)

Date:
To,

Managing Director
Capital Region Urban Transport
Block-1, 2nd Floor, BMC Bhawani Mall, Saheed Nagar
Bhubaneswar, Odisha (INDIA), Pin- 751007

Subject: Manufacturer's Authorization Form

Ref: RFP No. <<…..>> dated << …..>>

Dear Sir,
We ……..(Name of the OEM) who are established and reputable manufacturers of ……..(List of Goods) having factories or product development centres at the locations ……..or as per list attached, do hereby authorize ……. (Name and address of the Bidder) to bid, negotiate and conclude the contract with you against RFP No…….. Dated…… for the above goods manufactured or developed by us.

We hereby extend, our warranty for the hardware goods supplied by the bidder and or maintenance or support services for software products against this invitation for bid by ……(Name of the Bidder) as per requirements and for the duration of contract as specified in this RFP.

We also confirm that our offered product will not be end of life for minimum of 6 months from the date of bid submission and the support for such offered product/s will be available for minimum of 5 years from the date of award of contract

Thanking you,
Yours faithfully,
(Signature)
For and on behalf of: (Name of the OEM)

Authorized Signatory Name:
Designation:
Place:
Date: