Request for Proposal for Selection of System Integrator for Implementation of Command and Control Centre Components of Hubballi-Dharwad

Volume I

Instructions to Bidders

RFP No. UDD/2017-18/IND45

HUBBALLI DHARWAD SMART CITY LIMITED

Important Dates

S. No.	Activity	Deadline
1	Release of RFP	14.03.2018
2	Last date for seeking clarifications on RFP	06.04.2018
3	Pre-bid Meeting date	13.04.2018
4	Hosting clarifications/amendments to RFP if any	15.04.2018
5	Last date for submission of Bids	28.04.2018
6	Date of opening of Technical bids	01.05.2018
7	Date of opening of Commercial bids	To be notified later

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1.1 Background/Objective

The Ministry of Urban Development, Government of India (GoI) has rolled out Smart city Mission on 25 June, 2015. Hubballi Dharwad was selected among 100 cities to be developed as smart city in India due to various achievements, initiatives and all-inclusive approach. Accordingly Hubballi-Dharwad city had submitted "Smart City Proposal" (SCP) to Ministry of Urban Development, Government of India with required consent of Karnataka government and statutory authority of Hubballi-Dharwad Municipal Corporation. Karnataka Urban Infrastructure Development & Finance Corporation Limited (KUIDFC) is the State Level Nodal Agency (SLNA) for the Smart City Mission in Karnataka.

Hubballi-Dharwad has been selected to be developed into a smart city under the second round of the Smart Cities Mission. The Smart City Proposal of Hubballi-Dharwad includes the smart city solutions which involve the use of technology, information and data to improve infrastructure and services within the city of Hubballi-Dharwad (The Smart Solutions Projects).

Hubballi-Dharwad Smart City Limited (HDSCL) now intends to select a Master System Integrator to design and assist the Client in the Implementation of City Operations Centre (ICCC) in Hubballi-Dharwad.

1.2 Need for Present Assignment & Brief Scope of Work

The HDSCL, has identified certain Smart ICT intervention required to make the city smart. The broad functional & Technical requirements have been identified and has been provided under Volume 2 of the RFP. It is proposed to appoint a Local System Integrator (LSI) to implement /integrate the said ICT interventions, but not limited to:

A. Level 1: Integrate and View

Certain components will be integrated using direct feeds, dashboards and sharing of alerts/ actionable inputs for integrate and view operations, such as:

1. City Surveillance System (Police and Traffic)
2. Smart Governance
3. People Empowerment Platform
4. Disaster Management
5. Emergency Management
6. Intelligent Transport Management System
7. Electric SCADA
8. Water SCADA

B. Level 2: Integrate Command and Control

1. Smart Parking & Payment System
2. Smart Poles
3. CCMS for LED Street Lights
4. GIS Based Property Management System
5. Sewerage and Storm Water Drainage System

C. Level 3: Implement, Command, Control and Fully Operate

1. Integrated Command and Control Center (ICCC)
2. Smart IT Solid Waste Management
3. Geographical Information System (GIS)

Apart from the solutions listed above, there are other solutions that are to be implemented

by the LSI. These solutions are common components that form part of all other ICT solutions proposed to be implemented through this RFP. The solutions proposed as common components that are to be implemented by the LSI are the city network infrastructure and Integrated Command and Control Centre.

After implementing / integrating the above said solutions (in 15 Months, Phase I – 9 Months and Phase II- 6 Months), the bidder is expected to operate and maintain the said ICT interventions. The interventions implemented in phase I will have to be maintained for a period of 4 years and 3 months and the interventions implemented in phase II will have to be maintained for a period of 3 years 9 months. Total project duration is 5 years.

1.3 RFP Format

The intent of this RFP is to invite bids from the Bidders for implementation of City Operation Centre in Hubballi – Dharwad. The project also includes implementation of Integrated Solid Waste Management System & integration of city applications with Control and Command Centre in Hubballi-Dharwad for HDSCL.

The Request for Proposal (RFP) consists of three volumes viz.

1. RFP Volume 1: Instruction to Bidders

Volume 1 details the instructions with respect to the bid process management, technical evaluation framework, and the technical & commercial forms.

2. RFP Volume 2: Scope of work including Functional & Technical Specifications

Volume 2 of the RFP provides information regarding the Project Implementation Plan, business requirements/applications to be covered and corresponding process related documentation, scope of work for the selected bidder and functional requirements, timelines and payment schedule.

3. RFP Volume 3: Service Level Agreement

Volume 3 contains the contractual, legal terms & conditions applicable for the proposed engagement.

1.4 Fact sheet

Sl. No.	Item	Description
1	Method of Selection	The Selection of LSI shall be through two stage Least Cost System (LCS) with the 1st Stage consisting of Prequalification and Technical Criteria evaluation. The minimum qualifying marks for 1st stage would be 80 marks out of 100 marks. 2nd stage would be evaluation of Financial Bid and the Bidder with L1 Bid will be selected based on Grand Total Price (Capex Price + Opex Price with NPV) exclusive of applicable taxes.
2	Availability of RFP Documents	www.eproc.karnataka.gov.in
3	Date of RFP Issuance	14.03.2018
4	Tender Processing Fee (Non-refundable and Not-Exempted)	Please refer e-portal format for details
5	Bid Security/Earnest Money Deposit (EMD)	INR 39,57,000 valid upto 225 days beyond bid due date.
6	Last date and time for Submission of Pre-bid Queries	06.04.2018 at 11:00 hrs
7	Pre-Bid Conference time, date & Venue	13.04.2018 at 11:00 hrs at Meeting hall of Hubballi Dharwad Municipal Corporation.
8	Posting of responses to queries (on website)	www.eproc.karnataka.gov.in
9	Last Date and time for Bid/Bid submission (On or before)	28.04.2018, 16:00 hrs
10	Date, time for Opening of Pre-Qualification Bids	01.05.2018, 11:00 hrs
11	Bid validity	Bid must remain valid up to **180** (**One Hundred & Eighty**) days from the last date of submission of bid extendable upon request by authority.
12	Currency	Currency in which the bidders may quote the price and will receive payment is in Indian Rupees only.
13	Tender Inviting Authority	Hubballi Dharwad Smart City Limited
14	Name and Address for Correspondence/ Site Visit	Special Officer, Hubballi Dharwad Smart City Limited, HUbballi Contact no.0836-2355331

1.5 Definitions/Acronyms

Terms	Meaning
BOM	Bill of Material
BEC	Bid Evaluation Committee
CC	Capital Cost
CCTV	Closed Circuit Television
CEO	Chief Executive Officer
DD	Demand Draft
EMD	Earnest Money Deposit
GIS	Geographical Information Systems
GPS	Global Positioning System
HOD	Head of Department
ICT	Information and Communication Technology
INR	Indian Rupees
LoI	Letter of Intent
NPV	Net Present Value
OEM	Original Equipment Manufacture
PBG	Performance Bank Guarantee
PDD	Proposal Due Date
PoC	Proof of Concept
PQ	Pre-Qualification
RFP	Request for Proposal
PV	Present Value
LSI	Local System Integrator
SLA	Service Level Agreement
SOP	Standard Operating Procedures
TQ	Technical Qualification
UAT	User Acceptance Testing
VM	Virtual Machine
TRV	Total Revenue
O&M	Operations & Maintenance
Authority	Hubballi – Dharwad Smart City Limited

2. Instruction to Bidders

2.1 General

a. While every effort has been made to provide comprehensive and accurate background information, requirements and envisaged solution(s) specifications, Bidders must form their own conclusions about the solution(s) needed to meet the Authority's requirements. Bidders and recipients of this RFP may wish to consult their own legal advisers in relation to this RFP.

b. All information supplied by Bidders as part of their Bids in response to this RFP, may be treated as contractually binding on the Bidders, on successful award of the assignment by the Authority based on this RFP.

c. No commitment of any kind, contractual or otherwise shall exist unless and until a formal written contract has been executed by or on behalf of Authority. Any notification

of Preferred Bidder status by Authority shall not give rise to any enforceable rights by the Bidder. Authority may cancel this public procurement at any time prior to a formal written contract being executed by or on behalf of Authority.

d. Bids shall be received by the Authority on the e-Procurement portal www.eproc.karnataka.gov.in only, before the time and date specified in the schedule of the tender notice. The Authority may, at its discretion, extend this deadline for submission of offers by issuing corrigendum and uploading the same on e-Procurement portal.

e. Bid received through any other mode of communication except through e-procurement portal (email, Print-out, Telex, cable or facsimile offers) shall be rejected.

2.2 Eligible Bidders

Bids may be submitted by either of the following categories of Bidders only:

The Bidder shall be either a Single Entity or a Consortium of companies/ corporations as described below.

a. Sole Bidder

The Sole Bidder must be an entity which has the capabilities to deliver the entire scope as mentioned in the RFP. Under this sole bidding, the Bidder is not allowed to submit another bid through other consortium ways for the same RFP.

b. Consortium of Firms

Bids can be submitted by a consortium of firms. **A consortium shall not consist of more than three (3) parties (including the Lead Bidder)**. One of the Firms would be designated as a "Lead Bidder". The Lead Bidder shall be responsible for entire delivery of products, solutions, services, service delivery and meeting all the Terms & Conditions of this RFP (Volume 1 to 3). The Lead Bidder shall be responsible for ensuring the successful execution of integrated solution including meeting the SLAs. The list of Consortium Members needs to be declared in the bid which cannot be changed by the bidder later on. Any change in the consortium partner will need to be approved by Authority. The consortium agreement shall be submitted to this effect clear mentioning the scope of each partner on the stamp paper by the successful bidder.

The Sole or Lead Bidder will be responsible for:

i. Design, supply, installation and commissioning of all products and services submitted in their Bid and as part of the Contract.

ii. Responsible for the functioning of the proposed solution in totality to meet the Authority requirements outlined in the RFP.

iii. The management of all Consortium Members who are part of the Bid if any, and

Bids submitted by a consortium should comply with the following requirement also:

i. The Lead Bidder shall be authorized to incur liabilities and receive instructions for and on behalf of all Consortium Members. Entire execution of the Contract, including payment, shall be done exclusively by/with the Lead Bidder.

Internal arrangement between the Consortium Members is left to the Bidders. It is the responsibility of the Lead Bidder to ensure that the Consortium Members in the bid are compliant to all the clauses as mentioned in the bid, failing which leads to disqualification.

For the purpose of Bid submission of this RFP,

a. The entity submitting the Bid as a Lead Bidder cannot be a Consortium partner of any other Bidder.

b. The Consortium partners cannot be Sole Bidder/Lead Bidder with another Bidder in a separate Bid submitted against this RfP. Whereas any of the firm which is not the Lead Bidder in this RFP can be a partner in any number of bids submitted against this RFP.

c. The Sole Bidder cannot be a Lead Bidder or Consortium partner of any other Bidder Consortium members must provide a Memorandum of Understanding (MoU) as per Section 12 Annexure – 9, covering above points and showing their intention to enter into such an Agreement at the time of bidding along with Pre-Qualification Bid.

Bidders are encouraged to include Micro, Small and Medium Enterprises (MSMEs) in the delivery of the project.

2.3 Compliant Bids/Completeness of Response

a. Bidders are advised to study all instructions, forms, terms, requirements and other information in the RFP documents carefully. Submission of the Bid shall be deemed to have been done after careful study and examination of the RFP document with full understanding of its implications.

b. Failure to comply with the requirements of this paragraph may render the Bid non-compliant and the Bid may be rejected. Bidders must:

   i. Include all documentation specified in this RFP, in the Bid;

   ii. Follow the format of this RFP while developing the Bid and respond to each element in the order as set out in this RFP;

   Comply with all requirements as set out within this RFP;

2.4 Information to the Bidders

The Bidder shall be deemed to have carefully examined the Terms & Conditions, Scope, Service Levels, Specifications and Schedules of this RFP. If Bidder has any doubts/clarifications as to the meaning of any portion of the conditions or the specifications he shall, before the last date for Submission of Pre-Bid Queries, set forth thereof and submit them to Authority in writing in order that such doubt may be removed or clarifications are provided.

2.5 Bid Preparation costs

The Bidder shall bear all costs associated with the preparation and submission of its Bid, for the purposes of clarification of the Bid, if so desired by the Authority.

2.6 Pre-bid meeting & Clarification

2.6.1 Bidders Queries

Any clarification regarding the RFP document and any other item related to this Project can be submitted to Authority as per the submission mode and timelines mentioned in the Fact Sheet. The Pre-Bid Queries should be submitted in excel sheet format only, along with the covering letter specifying name and details of the organization submitting the queries.

Authority shall not be responsible for ensuring that the Bidders' queries have been received by them. Any requests for clarifications post the indicated date and time shall not be entertained by Authority.

Bidders must submit their queries as per the format mentioned in Section 5 - Annexure 1 to e-mail sohdsmartycity@gmail.com only to the authority.

2.6.2 Responses to Pre-Bid Queries and Issue of Corrigendum

Authority will organize a Pre-Bid Conference and will respond to any request for clarification or modification of the bidding documents. Authority shall formally respond to the Pre-Bid Queries after the Pre-Bid Conference. No further clarifications shall be entertained after the due date and time of submission of queries.

Pre-bid meeting will be held on the date and venue indicated in Section 1.4 of the RfP Volume 1.

Authority shall endeavor to provide timely response to all queries. However, Authority makes no representation or warranty as to the completeness or accuracy of any response made in good faith. Authority does not undertake to answer all the queries that have been

posed by the bidders.

Any modifications of the RFP documents, which may become necessary because of the Pre-Bid Conference, shall be made by Authority exclusively through a Addendum. Any such addendum shall be deemed to be incorporated to this RFP. However, in case of any such amendment, the Bid submission date may be extended at the discretion of Authority.

Any corrigendum/notification issued by Authority, after issue of RFP, shall only be available/ hosted on the Karnataka e-Procurement Portal. Any such corrigendum/addendum shall be deemed to be incorporated into this RFP.

2.7 Tender Processing Fee

RFP can be downloaded from the Karnataka e-Procurement Portal (https://eproc.karnataka.gov.in/eprocportal/pages/index.jsp).

Tender Processing Fee shall be paid online through e-Procurement portal. The Tender Processing Fee shall be non-refundable.

Without the payment of Tender Processing Fee, the Bids will be taken as incomplete and non-responsive and Bid will be rejected by e-portal.

2.8 Earnest Money Deposit (EMD)

EMD of Rs Rs 39,57,000 (INR thirty nine lakh fifty seven thousand only) shall be in the form of Bank Guarantee as per Annexure 7 (b). The EMD shall be from a Nationalized Bank/ Scheduled bank payable on demand at any of the bank branch at the Hubballi. No exemption for submitting the EMD will be given to any agency. EMD/Bid security in any other form will not be entertained. The EMD shall be valid for a period of 225 days and extendable upon request by the Authority, from the date of last date of submission of bid.

The Bidders shall upload the Bank Guarantee in the e-portal along with the Technical Bid documents. However, the original Bank Guarantee shall be submitted by the Bidder to the Authority on or before the time & date fixed for opening of the Technical Bids. Failure to do so, the Bid will be treated as non-responsive and will be rejected.

For Unsuccessful Bidders: The Bid Security of all Unsuccessful Bidders would be returned without interest, after submission of Performance Bank Guarantee / Additional bank guarantee by the Successful Bidder.

For Successful bidders: The Bid Security, for the amount mentioned above, of Successful Bidder would be returned without interest upon submission of Performance Bank Guarantee / additional bank guarantee by the Successful Bidder.

In case, Bid is submitted without the Bid Security then the Bid shall be treated as Non-Responsive and Bid shall be rejected.

The EMD may be forfeited in any of the following circumstances:

a. If the Bidder withdraws its Bid during the period of Bid Validity.

   In case of a Successful Bidder, if the Bidder fails to submit the Performance Bank Guarantee and/or sign the Contract in accordance with this RFP.

2.9 Bid Validity Period

Bid shall remain valid for the time period of 180 days from the last date of submission of the Bids, extendable upon request by Authority. On completion of the Validity Period, unless the Bidder withdraws his Bid in writing, it will be deemed to be valid until such time that the Bidder formally (in writing) withdraws his Bid.

2.10 Contents of Bid

The two cover system shall be followed. Pre –Qualification (PQ), Technical and Commercial Offers shall be uploaded separately through the e - Procurement portal.

Document Set	Name of the Document	Content
One	Pre- Qualification Bid	a. Earnest Money Deposit (EMD) b. Pre-Qualification bid as per Section 6: Formats for submission of the Pre- Qualification Bid along with the required supporting documents. c. No deviation certificate as per Section 6.5 d. Total Responsibility declaration as per Section 6.6 e. Any other documents / certificates as mentioned in the annexure and Section 6.
Two	Technical Bid	a. Technical Bid as per Section 7 : Formats for submission of the Technical Bid along with the required supporting documents b. Response to Functional Requirement Specification (FRS) and Technical Requirement Specifications(TRS) c. Proof of Concept and Presentation to the Authority / Committee appointed by the Authority
Three	Commercial Bid	As per e-procurement portal.

a. The prequalification and Technical Proposal ***shall not include any financial proposal***. Bid will be treated Technically Non Responsive if technical proposal includes any Financial Proposal details.

b. Bid cannot be uploaded on e-portal after due date for submission of bid.

c. Authority will not accept delivery of bid by fax, e-mail or in-person or in any other mode

2.11 Bid Formats

Bidder shall prepare compliance documents against each of the serial numbers of the Pre-Qualification Bid format given below in pdf format as per the nomenclature given in the column "Doc Ref" and these PDF documents shall be uploaded in the e-procurement portal as part of Pre-Qualification Bid.

2.11.1 Pre-Qualification Bid Format

Section #	Section Heading	Details	Doc Ref
1.	Pre-qualification checklist	As per format provided in Annexure 2 section 6.1	QP-1
2.	Pre-Qualification Bid Covering Letter	As per format provided in Annexure 2 section 6.2	QP-2

Section #	Section Heading	Details	Doc Ref
3.	Consortium Agreement	As per format provided in Annexure 7 of this Volume section 12	QP-3
4.	Company Profile (about the Sole Bidder / Lead Bidder & Consortium Members)	As per format provided in Annexure 2 section 6.3	QP-4
5.	Power of Attorney	Documentary evidence as per format provided in Annexure 10 and 11	QP-5
6.	Project Experience	Citation details of projects as per format in Section 7.4 and 6.7 as applicable.	QP-6
7.	No Deviation Certificate	As per format provided in Annexure 2 section 6.5	QP-7
8.	Total responsibility certificate	As per format in Annexure 2 Section 6.6	QP-8

Section #	Section Heading	Details	Doc Ref
9.	Pre-qualification checklist	As per format provided in Annexure 2 section 6.1	QP-1
10.	Pre-Qualification Bid Covering Letter	As per format provided in Annexure 2 section 6.2	QP-2
11.	Consortium Agreement	As per format provided in Annexure 7 of this Volume section 12	QP-3
12.	Company Profile (about the Sole Bidder / Lead Bidder & Consortium Members)	As per format provided in Annexure 2 section 6.3	QP-4
13.	Power of Attorney	Documentary evidence as per format provided in Annexure 8 and 9	QP-5
14.	Project Experience	Citation details of projects as per format in Section 7.4 and 6.8 as applicable.	QP-6
15.	No Deviation Certificate	As per format provided in Annexure 2 section 6.6	QP-7
16.	Total responsibility certificate	As per format in Annexure 2 Section 6.7	QP-8

2.11.2 Technical Bid Format

Bidder shall prepare compliance documents against each of the serial numbers of the Technical Bid format given below in pdf format as per the nomenclature given in the column "DocRef" and these pdf documents shall be uploaded in the e-procurement portal as part of Technical Bid.

Section #	Section Heading	Details	Doc Ref
1.	Technical Bid Checklist	As per format provided in Annexure 3 section 7.1	TB-1
2.	Technical Bid covering letter	As per format provided in Annexure 3 section 7.2	TB-2
3.	Compliance to Requirement (Technical/Functional Specifications)	As per format in Section 7.8	TB-3
4.	Proposed Bill of Materials	As per format in Section 7.9	TB-4
5.	Project/ Credential Summary	As per format provided in Annexure 3 section 7.3	TB-5
6.	Bidder's Experience	Project citation as per format provided in Annexure 3 section 7.4 and supporting documentary evidences and Self-certifications as per format in Annexure 2 section 6.7 as applicable	TB-6
7.	Project Plan and Resources	• Project plan as per format provided in section 7.5.2 • Manpower plan as per format provided in section 7.5.3 I & II • Summary of resources as per format provided in section 7.6.1 • CV of resources as per format provided in section 7.7	TB-7
8.	Manufacturers'/Producers' Authorization Form	As per format provided in section 7.10	TB-8
9.	Anti – Collusion Certificate	As per format provided in section 7.11	TB-9
10.	Non – disclosure Agreement	As per format provided in Section 11 Annexure 8	TB-10
11.	Details of additional components mentioned as others in the BoQ	As per format specified in Section 7.12	TB-11

Section #	Section Heading	Details	Doc Ref
12.	Tax Form	As per the format specified in the Section 7.13	TB-12

2.11.3 Commercial Bid Format

The Bidder must submit the Commercial Bid as per the e-procurement portal.

2.12 Language

The bid should be prepared and submitted by the bidders in English language only. If any submitted supporting documents are in any language other than English, translation of the same in English language shall be provided (duly attested by the authorized entity) by the Bidders. For purposes of interpretation of the documents, the English translation shall govern.

2.13 Authentication of Bids

Bid should be accompanied by an authorization in the name of the signatory (or signatories) of the Bid. The authorization shall be in the form of a written power of attorney accompanying the bid or in any other form demonstrating that the representative has been duly authorized to sign. (Enclose Annexure 13 or 14 as applicable)

2.14 Amendment of Request for Proposal

At any time prior to the due date for submission of bid, Authority may, for any reason, whether at its own initiative or in response to a clarification requested by prospective Bidder(s), modify the RFP document by amendments. Such amendments shall be uploaded on the e-procurement portal website, through addendum /corrigendum and shall form an integral part of RFP document. The relevant clauses of the RFP document shall be treated as amended accordingly.

It shall be the responsibility of the prospective bidder(s) to check the e-Procurement Portal from time to time for any amendment in the RFP document. In case of failure to get the amendments, if any, Authority shall not be responsible.

In order to allow prospective bidders a reasonable time to take the amendment into account in preparing their bids, Authority, at its discretion, may extend the deadline for submission of bids. Such extensions shall be uploaded on the e-Procurement Portal.

2.15 Bid Price

Bidders shall quote for the entire scope of contract on an "overall responsibility" basis such that the total bid price covers Bidder's all obligations mentioned in or to be reasonably inferred from the bidding documents in respect of providing the product/services.

Prices quoted by the Bidder for line item rates shall remain firm during the entire contract period and not subject to price variation on any account.

In the e-procurement portal, the bidder shall enter the unit price of the line item, exclusive of all taxes. However, for Authority's understanding, the bidder shall give the required details of the tax component as per Section 7.13, considered for each line item / additional line items in Section 7.12. Tax percentage shall not be considered for financial evaluation.

Commercial bids shall be submitted as per the e-procurement portal.

2.16 Deviations and Exclusions

Bids shall be submitted strictly in accordance with the requirements and terms & conditions of the RFP. The Bidder shall submit a No Deviation Certificate as per the format mentioned in Section 6.5. The bids with deviation(s) are liable for rejection.

2.17 Total Responsibility

Bidder should issue a statement undertaking total responsibility for the defect free

operation of the proposed solution as per the format mentioned in Section 6.6.

2.18 Late Bids

Late submission will not be entertained and will not be permitted by the e-Procurement Portal.

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

Authority shall not be responsible for any non-receipt/non-delivery of the documents due to technical snag whatsoever at Bidder's end. No further correspondence on the subject will be entertained.

Authority reserves the right to modify and amend any of the above-stipulated condition/criterion.

2.19 Right to Terminate the Process

Authority reserves the right to terminate the RFP process at any time and without assigning any reason. Authority makes no commitments, express or implied, that this process will result in a business transaction with anyone. This RFP does not constitute an offer by Authority.

2.20 Non-Conforming bids

A Bid may be construed as a non-conforming Bids and ineligible for consideration:

If it does not comply with the requirements of this RFP.

If a bid does not follow the format requested in this RFP or does not appear to address the requirements of the solution.

2.21 Acceptance/Rejection of Bids

a. Authority reserves the right to reject in full or part, any or all Bids without assigning any reason thereof. Authority reserves the right to assess the Bidder's capabilities and capacity. The decision of Authority shall be final and binding.

b. Bid should be free of overwriting. All erasures, correction or addition must be clearly written both in words and figures and attested.

In the event of any assumptions, presumptions, key points of discussion, recommendation or any points of similar nature submitted along with the Bid, Authority reserves the right to reject the Bid and forfeit the EMD.

2.22 Confidentiality

All the material /information shared with the Bidder during this procurement process as well as the subsequent resulting engagement following this process with the Successful Bidder, shall be treated as confidential and should not be disclosed in any manner to any unauthorized person under any circumstances. The employees of the successful Lead bidder and Consortium members who are proposed to be deployed on the project need to furnish a Non-Disclosure Agreement (NDA) as per the format mentioned in Section 11 Annexure 8.

2.23 Disqualification

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

a. Deleted

b. The Bidder's Bid is conditional and has deviations from the terms and conditions of RFP.

c. Bid is received in incomplete form.

d. Bid is not accompanied by all the requisite documents.

e. Information submitted in technical bid 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) or during the tenure of the contract including the extension period, if any.

f. Commercial Bid is enclosed with the same document as technical bid.

g. Bidder tries to influence the bid evaluation process by unlawful/corrupt/fraudulent means at any point of time during the bid process

h. In case any one party / same consortium submits multiple bids or if common interests are found in two or more Bidders with reference to Section 2.2 (b), the bidders are likely to be disqualified, unless additional bids/bidders are withdrawn upon notice immediately.

i. Bids without EMD will be disqualified.

2.24 Key Personnel

Authority has identified certain key positions, which are minimum in requirement and minimum qualifications for each of the positions that should be part of project team of the bidder (hereby referred to as "Key Personnel Criteria"). Details of these key positions are provided in **Section 3.4.3.**

2.24.1 Initial Composition; Full Time Obligation; Continuity of Personnel

Bidder shall ensure that each member of the Key Personnel devotes substantial working time as per the staffing schedule/ manpower plan to perform the services to which that person has been assigned as per the Bid.

Bidder shall not make any changes to the composition of the Key Personnel and not require or request any member of the Key Personnel to cease or reduce his or her involvement in the provision of the Services during the defined term of the engagement unless that person resigns, is terminated for cause, is long-term disabled, is on permitted mandatory leave under Applicable Law or retires.

In any such case, the Authority's prior written consent would be mandatory.

2.24.2 Evaluations

Bidder shall carryout an evaluation of the performance of each member of the Key Personnel in connection with the Services at least once in each Contract Year. Bidder shall provide reasonable written notice to Authority of the date of each evaluation of each member of the Key Personnel. Authority shall been titled to provide inputs to the Bidder for each such evaluation. Bidder shall promptly provide the results of each evaluation to Authority, subject to Applicable Law.

2.24.3 Replacement

In case any proposed resource resigns, then the Bidder has to inform Authority within one week of such resignation.

Bidder shall ensure that key personnel role is not vacant at any point in time during the contract period.

Before assigning any replacement member of the Key Personnel to the provision of the Services, Bidder shall provide Authority with:

a. a resume, curriculum vitae and any other information about the candidate; and

b. An opportunity to interview the candidate.

The Bidder has to provide replacement resource of equal or better qualification and experience as per the requirements of this RFP.

If Authority objects to the appointment, Bidder shall not assign the individual to that position and shall seek an alternative candidate in accordance with the resource requirements of this RFP.

The Bidder needs to ensure at least 4 weeks of overlap period in such replacements. Authority will not be responsible for any knowledge transition to the replacement resource and any impact/escalation of cost incurred by the Bidder due to resource replacement.

2.24.4 High Attrition

If in the first 6 month period from the Contract effective date and in any rolling 12 months period during the term of contract, 15 percent or more of the members of the Key Personnel cease or reduce their involvement in the services for any reason other than with Authority's prior written consent, Bidder shall:

a. provide Authority with a reasonably detailed explanation as to the reasons for such change, including, where applicable and permitted, notes from any exit interviews conducted by bidder with any departing member of the Key Personnel; and

b. if such change to Key Personnel has or is likely to have any material adverse impact on the provision of the Services or any substantial part thereof, undertake, at its own costs, such remediation acts as are reasonably necessary in order to improve the retention of the Key Personnel including making reasonable changes to the human resources policies and procedures applicable to the Key Personnel (including those related to compensation, benefits and other conditions so that they are competitive with the market) as may be necessary to ensure that such policies and procedures comply with Good Industry Practice.

c. For any replacement of key personnel penalty will be levied as given in Volume III Section 12.5.

2.25 Fraud and Corrupt Practices

a. The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Selection Process. Notwithstanding anything to the contrary contained in this RFP, Authority 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 in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice (collectively the "Prohibited Practices") in the Selection Process. In such an event, Authority shall, without prejudice to its any other rights or remedies, forfeit and appropriate the EMD or PBG, as the case may be, as mutually agreed genuine pre-estimated compensation and damages payable to Authority for, inter alia, time, cost and effort of Authority, in regard to the RFP, including consideration and evaluation of such Bidder's Bid.

b. Without prejudice to the rights of Authority under Clause above and the rights and remedies which Authority may have under the LOI or the Agreement, if a Bidder is found by Authority 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 Selection Process, or after the issue of the LOI or the execution of the Agreement, such Bidder shall not be eligible to participate in any tender or RFP issued by Authority during a period of 3 years from the date such Bidder is found by Authority to have directly or through an agent, engaged or indulged in any Prohibited Practices.

c. For the purposes of this Section, the following terms shall have the meaning hereinafter respectively assigned to them:

    i. "corrupt practice" means (I) the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of any person connected with the Selection Process (for avoidance of doubt, offering of employment to or employing or engaging in any manner whatsoever, directly or indirectly, any official of Authority who is or has been associated in any manner, directly or indirectly with the Selection Process or the LOI or has dealt with matters concerning the 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 Authority, shall be deemed to constitute influencing the actions of a person connected with the Selection Process); or (ii) same as provided herein, engaging in any manner whatsoever, whether during the Selection Process or after the issue of the LOA or after the execution of the Agreement, as the case may be, any person in respect of any matter relating to the Project or the Award or the Agreement, who at any time has been or is a legal, financial or technical consultant/adviser of Authority in relation to any matter concerning the Project;

ii. "fraudulent practice" means a misrepresentation or omission of facts or disclosure of incomplete facts, in order to influence the Selection Process;

iii. "coercive practice" means impairing or harming or threatening to impair or harm, directly or indirectly, any persons or property to influence any person's participation or action in the Selection Process;

iv. "undesirable practice" means (i) establishing contact with any person connected with or employed or engaged by Authority with the objective of canvassing, lobbying or in any manner influencing or attempting to influence the Selection Process; or (ii) having a Conflict of Interest; and

v. "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 Selection Process.

2.26 Conflict of Interest

a. A Bidder shall not have a conflict of interest that may affect the selection process or the solution delivery (the "Conflict of Interest"). Any Bidder found to have a Conflict of Interest shall be disqualified. In the event of disqualification, Authority shall forfeit and appropriate the EMD, if available, as mutually agreed genuine pre-estimated compensation and damages payable to Authority for, inter alia, the time, cost and effort of Authority including consideration of such Bidder's Bid, without prejudice to any other right or remedy that may be available to Authority hereunder or otherwise.

b. Authority requires that the Bidder provides solutions which at all times hold Authority's interest's paramount, avoid conflicts with other assignments or its own interests, and act without any consideration for future work. The Bidder shall not accept or engage in any assignment that would conflict with its prior or current obligations to other clients, or that may place it in a position of not being able to carry out the assignment in the best interests of Authority.

c. Government of Karnataka (GoK) expects Bidders to provide professional, objective, and impartial advice and at all times hold the Client's interests paramount, without any consideration for future work, and strictly avoid conflicts with other assignments or their own corporate interests. Bidders shall not be hired for any assignment that would be in conflict with their prior or current obligations to other clients, or that may place them in a position of not being able to carry out the assignment in the best interest of the Client.

d. Bidders or any of their affiliates / key personnel shall not be hired for any assignment which, by its nature, may be in conflict with another assignment of the bidder.

2.27 Sub-Contracting

Sub-contracting shall be allowed only to non-IT infrastructure works. However, even if the work is sub-contracted, the sole responsibility of the work shall lie with the Lead Bidder or sole bidder. The lead bidder or sole bidder shall be held responsible for any delay/error/non-compliance etc. of its sub-contracted vendor. The details of the sub-contracting agreements (if any) between both the parties would be required to be submitted to Authority.

a. All Site Preparation and Civil Work Related to CCC including Cabling and Fixture work

However, even if the work is sub-contracted, the sole responsibility of the work shall lie with the Lead Bidder or Sole Bidder. The Lead Bidder or Sole Bidder shall be held responsible for any delay/error/non-compliance etc. of its sub-contracted vendor. The details of the sub-contracting agreements (if any) between both the parties would be required to be submitted to Authority.

Bidders are encouraged to include Micro, Small and Medium Enterprises (MSMEs) in the delivery of the project.

2.28 Eligible Goods and Services, and OEM Criteria:

a. For purposes of this clause, the term "goods" includes commodities, raw material, machinery, equipment, and industrial plants; and "related services" includes services such as insurance, transportation, supply, installation, integration, and testing, commissioning, training, and initial maintenance.

b. The Bidder shall quote specific make and model of OEM, for each of the goods. Providing more than one option shall not be allowed. All goods quoted by the bidder must be associated with item code and names and with printed literature describing configuration and functionality. Any deviation from the printed specifications should be clearly mentioned in the offer document by the Bidder.

c. The OEM for each products or technology quoted should be in the business of that product or solution or technology for at least 5 years as on the date of release of the RFP.

d. All the OEMs should have authorized presence in India either directly or through channel partner(s) as on the date of release of RFP.

e. The OEM for all active components should give a declaration that products or technology quoted/proposed shall not reach end of- sale, end-of-life for a minimum of 5 Years from the date of Last Date of Bid Submission and end of support for minimum of 5 years from the date of Go-Live.

f. Bidder must quote products in accordance with above clause "Eligible goods and related services".

j. The Bidder's proposed OEM should not have been blacklisted by any State / Central Government Department or Central /State PSUs as on bid submission date.

k. Each of the proposed OEMs should either have existing capability and infrastructure to provide 24x7 technical support in India across the year, or should provide an undertaking that they would establish the requisite infrastructure and capability to provide 24x7 technical support in India across the year, on emerging a winner in this bidding process.

Adequate supporting documents pertaining to the above points, along with a summary compliance table, should be submitted in the technical proposal by the Bidder.

2.29 Right to vary quantity

a. At the time of award of contract and post award of work, the quantity of goods, works or services originally specified in the bidding documents may be increased to

max 25% of the present quantity. It shall be without any change in the unit prices or other terms and conditions of the Bid and the bidding documents. In the event, either the goods, works or services for which variation is sought for, then the same shall be done through Change Request Note (CRN). The CRN will be evaluated by a Third Party Committee formed by the Authority and the decision of the Committee will be final on the scope and rate. In case of decrease in quantity, it will be limited to max of 25% reduction of contract value only.

b. If the Authority does not procure any subject matter of procurement or procures less than the quantity specified in the bidding documents due to change in circumstances, the bidder shall not be entitled for any claim or compensation except otherwise provided in the bidding document.

c. Repeat orders for extra items or additional quantities may be placed, if it is provided in the bidding document, on the rates and conditions given in the contract if the original order was given after inviting open competitive bids. Delivery or completion period may also be proportionally increased.

2.30 Withdrawal, Substitution, and Modification of Bids

a. A Bidder may withdraw its Bid or re-submit its Bid (technical and/ or financial) as per the instructions/ procedure mentioned at e-Procurement website.

b. Bids withdrawn shall not be opened and processed further.

2.31 Site Visit

a. The Bidder may wish to visit the site and obtain for itself, at its own responsibility and risk, all information that may be necessary for preparing the Bid and entering into the Contract. The costs of visiting the site or sites shall be at the Bidder's own expense.

b. The Authority will arrange for the Bidder and any of its personnel or agents to gain access to the relevant site or sites, provided that the Bidder gives the Authority adequate notice of a proposed visit of at least seven (7) days. Failure of a Bidder to make a site visit will not be a cause for its disqualification.

c. No Site visits shall be arranged or scheduled after the deadline for the submission of the bids and prior of the award of Contract.

3. Selection Process for Bidder

3.1 Opening of Bids

The Bids shall be opened by Authority in presence of those Bidders or their representatives who may be present at the time of opening.

The representatives of the Bidders should be advised to carry the identity card or a letter of authority from the bidder firms to identify that they are bonafide representatives of the Bidder firm, for attending the opening of Bid.

There will be two (2) bid-opening events

a. STAGE 1 (Pre-Qualification Bid and Technical Bid)

b. STAGE 2 (Commercial bid)

The venue, date and time for opening the Pre-qualification & Technical Bid are mentioned in the Fact sheet.

The Technical Bids will be evaluated only for those bidders who meet the Pre-qualification criteria.

The Commercial Bids will be opened only for those Bidders who are declared as technically

qualified.

The date and time for opening of Commercial bid shall be communicated to the qualified bidders.

3.2 Preliminary Examination of Bids

Authority shall examine the Bids to determine whether they are complete, whether the documents have been properly signed and whether the bids are generally in order. Any bids found to be nonresponsive for any reason or not meeting any criteria specified in the RFP, shall be rejected by Authority and shall not be included for further consideration.

Initial Bid scrutiny shall be held and Bids will be treated as non-responsive, if Bids are:

- Not submitted in format as specified in the RFP document
- Received without the Letter of Authorization (Power of Attorney)
- Found with suppression of details
- With incomplete information, subjective, conditional offers and partial offers submitted
- Submitted without the documents requested
- Non-compliant to any of the clauses mentioned in the RFP
- With lesser validity period
- EMD not submitted / lesser EMD validity period
- If the Bidder gives wrong information in the Bid.
- Canvassing in any form in connection with the Bid.
- Bids submitted after due date and time.
- Bids submitted by Telex/Telegram/Fax/e-mail.
- Erasure and/or over writing is/are Not permissible
- Bids not signed by authorized signatory

3.3 Clarification on Bids

During the Bid evaluation, Authority may, at its discretion, ask the Bidder for any clarification(s) of its bid. The request for clarification and the response shall be in writing, and no change in the price or substance of the bid shall be sought, offered, or permitted. Clarifications shall be obtained only in pre-historic information like Bidders credentials.

3.4 Evaluation Process

Authority shall constitute a Committee to evaluate the responses of the Bidders. The Committee shall evaluate the responses to the RFP and all supporting documents/documentary evidence. Inability to submit requisite supporting documents/documentary evidence by bidders may lead to rejection of their Bids.

The decision of the Authority in the evaluation of Bids shall be final and binding on all the Bidders. No correspondence will be entertained outside the process of evaluation with the Authority. The Authority may ask for meetings or presentation with the Bidders to seek clarifications or conformations on their Bids.

The Authority reserves the right to reject any or all Bids. Each of the responses shall be evaluated as per the criteria and requirements specified in this RFP.

The steps for evaluation are as follows:

3.4.1 Stage 1 (A): Pre-Qualification

a. Authority shall validate the Set 1 “Tender Processing Fee & Earnest Money Deposit (EMD)”.

b. If the contents of the Set 1 are as per requirements, Authority shall open the "Pre-Qualification Bid". Each of the Pre-Qualification Criteria mentioned in Section 3.5 is MANDATORY. In case, the Bids does not meet any one of the conditions, the bids shall be treated as non-responsive and will not be considered for further evaluation.

c. Bids of only those Bidders who meets the Pre-Qualification criteria, shall be considered for further evaluation i.e Stage-1 (B): Technical Evaluation.

3.4.2 Stage 1 (B): Technical Evaluation

a. "Technical Bids" will be evaluated only for the Bidders who have succeeded in Stage 1 (A).

b. The Committee appointed by the Authority will review the Technical Bids to determine whether the Technical Bids are responsive. Bids that are not responsive are liable to be disqualified at Authority's discretion.

c. The Bidders' technical solutions proposed in the Bid document shall be evaluated as per the requirements specified in the RFP and technical evaluation framework as mentioned in Section 3.6.

d. The Bidder shall make the presentation to the Authority /Committee appointed by the Authority to supplement their Bids which include the following

- Approach & Methodology including Project Experience
- Proposed Solutions
- Manpower – Technical Resources
- Proof of Concept of proposed solution

The Authority envisages to have proof of concept / technical demonstration to evaluate the technology & system performance for getting city business outcome;

During the Demonstration/Proof-of-Concept (PoC) at technical evaluation stage, the Evaluation Committee will give special attention to verify the quality, robustness and appropriateness of the proposed Solutions/Equipment. If any brand / products are found un-suitable, Bidder may get disqualified or may be asked to replace the product with better products, meeting the tender requirements, without any change in commercial bid. Bidder may demonstrate local setup or existing deployments over network/cloud.

The Authority will notify the date and venue for conducting such proof of concept / technical demonstration to the prospective bidders.

Each Technical Bid will be assigned a technical score out of a maximum of 100 Points.

Only those bids who get an Overall Technical score of 80 or more of the Technical Evaluation Framework as given in Section 3.6 shall be considered technically qualified. Bids which scores less than 80 points, shall be treated as Technically Disqualified bids and their commercial bids will not be opened.

3.4.3 Stage 2: Commercial Evaluation

a. All the technically qualified bidders will be notified to participate in the Commercial Bid opening process.

b. The commercial bids of only those bidders which have qualified in Stage-1 (A) & Stage -1 (B) shall then be opened on the notified date and time and reviewed to determine whether the commercial bids are substantially responsive. Bids that are not substantially responsive are liable to be disqualified at Authority's discretion.

c. Bid prices are to be provided as per the format provided in the e-procurement portal.

d. Since the payments to the SI shall be made over several years, the Net Present Value

(NPV) method will be used for evaluation of the Commercial bids, so as to bring all bidders to a common denomination for determination of lowest bidder. The Bidder shall quote their O&M rates as per their own assessment. However, the Authority will calculate the NPV of the quoted amount as per the formula below for the purpose of evaluation. The Net Present Value of a contract is equal to the sum of the present values of all the cash flows associated with it. The formula for calculating NPV of a Commercial bid is illustrated below:

$P = C + [(O1) / (1+r)] + [(O2 / (1+r)^2] + [(O3) / (1+r)^3] + [(O4) / (1+r)^4] + [(O5) / (1+r)^5]$

Where: P= Final Price

C = Total Capex Price, O1 = Opex Price for Year 1

O2 = Opex Price for Year 2, O3 = Opex Price for Year 3,

O4 = Opex Price for Year 4, O5 = Opex Price for Year 5

R = Rate of Interest / Discounting Rate at **10%**

e. Bidder shall provide breakup of all Taxes (in percentage) considered by him, as per the Section 7.13. However, the Authority shall consider Grand Total Price (Capex Price+ Opex Price with NPV) exclusive of applicable taxes, for evaluation purpose and arriving at L1 price. In case of tie in prices, the Bidder who has scored highest technical score among the ties shall be considered as L1.

f. The Bid quoted by the L1 Bidder will be considered for awarding the contract.

3.5 Pre-Qualification Criteria as per Stage 1 (A)

No	Pre-Qualification Criteria	Documentary Evidence
1	The Sole Bidder or the Lead Bidder of Consortium must be registered company in India and should be in the business & have been operational at least for last 5 years as on date of bid submission.	• Copy of Certificate of Incorporation / Registration under companies Act, 1956/2013 and its subsequent amendments. • Memorandum and Articles of Association • GST registration certificate • Copy of purchase orders showing at least 5 years of operations OR Certified true copy of relevant extracts of balance sheet and PL statements for last 5 years. **For Consortium members** • GST registration certificate • PAN • Consortium agreement/MoU clearly stating the roles and responsibilities and scope of works of each member/ partner company.
2	The Sole Bidder/ Lead Bidder should have an average annual turnover of INR 80 Crore from	Audited statement for last 3 financial years of the sole bidder. Audited statement for last 3 financial years

No	Pre-Qualification Criteria	Documentary Evidence
	the operations which includes at least any one activities from the list "IT systems/ IT systems integration/ IT services/ ICT/ System integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC)" in over last 3 audited financial years from the date of NIT In case of a consortium, the Lead Bidder should have average annual turnover of at least 50% of the total turnover. The combined average annual turnover of the Lead Bidder and Consortium company/companies shall be minimum of Rs 80 Crores.	of lead bidder and its member companies. Certificate from the Chartered Accountant/ statutory auditor/ Company Secretary clearly specifying the annual turnover from the operations which includes at least any one activities from "IT systems/ IT systems integration/ IT services/ ICT/ System integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC)" for the specified years. (Applicable to sole bidder or lead bidder) Certificate from the Chartered Accountant/ statutory auditor/ Company Secretary clearly specifying the annual turnover from the operations which includes at least one activity from "IT systems/ IT systems integration/ IT services/ ICT/ System integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC)" for the specified years. (Applicable to consortium member companies)
3	The sole bidder or the consortium should have a positive net worth for the previous 3 financial years from the date of NIT	Audited and certified Balance Sheet and Profit/Loss Account of the previous 3 financial year Certificate from the statutory auditor/ Company secretary clearly specifying the Net worth of the firm for the specified year to be provided.
4	As on date of the submission of the proposal, the sole bidder or the consortium should not be black listed or debarred by Central/State governments/PSU in India	Undertaking from the authorized signatory of the bidder (in case of Consortium, to be provided by each member) as per the format in Section 6.4
5	The Sole Bidder or lead bidder of the Consortium should possess relevant CMMi level 3 and or relevant ISO Certifications which are valid at the time of bidding	Copies of the relevant certifications.

No	Pre-Qualification Criteria	Documentary Evidence
6	The Sole Bidder or the Consortium should have experience in executing at least 2 nos. of ICT projects which includes any of the following areas during last 5 years as on bid submission date: Value of each project should be minimum of Rs. 5 Crore 1.Smart Transport 2.ICT based SWM 3.Variable messaging system/public address system. 4.E-Governance applications 5.Smart utilities like water/UGD 6.Smart parking/smart lighting 7.Surveillance 8.Emergency Response system Other applications as per City requirement.	Copies of work order, Client certificate indicating satisfactory completion of the Project and other relevant documents. Note: 1. The date of work order should be at least 6 months before the date of release of this RFP. 2. In case of ongoing projects, the project must have achieved 80% of the capex completion from financial & physical perspective. 3. In case the experience shown is that of bidder's parent/subsidiary/ sisters concern company, then the following additional documents are required a. Letter from Company Secretary of the bidder certifying that the entity whose experience shown is parent/subsidiary/sister concern company b. Share holding pattern of the bidding entity as per audit report

No	Pre-Qualification Criteria	Documentary Evidence
7	The Sole bidder or the Consortium must have on its pay roll a team of 10 or more technically qualified professionals.	Self Certification from the bidder for the number of technically qualified professionals employed in the company with their qualification and skill set. (Applicable to sole bidder or lead bidder of consortium or its member company)

Notes:

1. For international projects, if the original client certificate and other documents are in language other than English, then a translated copy duly certified by authorized entity.
2. For projects where fee has been received in any currency other than Indian Rupees, then the foreign currency conversion rate available on Reserve Bank of India's portal as on the date of publication of the tender document shall be used for conversion of amount in foreign currency to Indian Rupees equivalent.
3. Bidders are allowed to submit experience in terms of technical qualification of their holding (parent) company or subsidiary company or Sister Concern only.

   a. A 'holding company', in relation to one or more other companies, means a company of which such companies are subsidiary companies; and

   b. A 'subsidiary company' in relation to any other company (that is to say the holding company), means a company in which the holding company— (a) controls the composition of the Board of Directors; or (b) exercises or controls more than one-half of the total share capital at its own

   c. A 'sister concern' in relation to Bidder Company, means a company whose holding company is same as bidder's holding company and holding company (a) controls the composition of the Board of Directors; or (b) exercises or controls more than one-half of the total share capital at its own.
4. In case where the bidder is dependent upon the technical experience of the subsidiary company or the parent company or the sister concern, with a view to ensure commitment and involvement of the parent/ subsidiary/sister company for successful execution of the contract, the participating bidder should enclose (i) an Agreement (as per format enclosed at Section 15 Annexure 12 of this Volume) between the bidder and its parent / subsidiary/Sister concern company for fulfilling the obligation and deployment of expert during implementation phase for the Track/Component for which the experience is being used and (ii) Guarantee (as per format enclosed at Section 16 Annexure 13 of this Volume) from the parent/ subsidiary/sister concern company in favor of the Authority.

3.6 Technical Evaluation Framework

The Bidder's technical solution proposed in the Technical Evaluation bid shall be evaluated as per the evaluation criteria in the following table.

Section No.	Evaluation Criteria	Total Points
A.	Bidders Experience and Organization strength	20
B.	Project Experience	30
C.	Approach&Methodology&Solutionsproposed	30

Section No.	Evaluation Criteria	Total Points
	and Proof of concept	
D	Proposed resources	20
Overall Technical Score		**100**

- **Important**: Bidder who scores, the following, will be qualified in the technical evaluation stage and be eligible for commercial evaluation stage.
  - Minimum of 80 Points of the overall total technical score
  - Minimum 50% of the maximum allotted marks in each section as given in the table above

Note:

- Authority, as part of due diligence reserves the right to check/validate the authenticity of the information provided in the Pre-qualification and Technical Evaluation criteria and the requisite support must be provided by the Bidder.
- Bidder to submit work order and end client work in-progress (minimum 80% Project completion) / completion certificate as supporting documents for each Project.
- Project citations of only up to one level of sub-contracting will be considered for evaluation.

The following sections explain how the Bidders shall be evaluated on each of the evaluation criteria:

3.6.1 Technical Bid Criteria & Evaluation

#	Technical Evaluation Criteria	Technical Evaluation parameter	Points	Supporting documents required
A.	*Bidders Experience & Organization Strength*			
A1	The Bidder (or any consortium member) should have demonstrable expertise and experience in executing large ICT projects during last seven years as on bid due date.	The bidder (or any consortium member) should have experience in executing at least one large ICT Project during last 5 years as on bid submission date: Value of the project should be minimum of INR 40 Crore. Cost of the Project – Percentage More than INR 80 Crore – 95 INR 56 Crore to 80 Crore – 65 INR 40 Crore to 55 Crore – 45 Additional 5 percentage of mark for projects executed in Govt Sector/PSU.	*7*	*Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.*

<table>
<tr><th>#</th><th>Technical Evaluation Criteria</th><th>Technical Evaluation parameter</th><th>Points</th><th>Supporting documents required</th></tr>
<tr><td>A2</td><td>Company Profile:
Bidder should have an average annual turnover of at least INR 80 crore in any of the 3 financial years (FY 2014-15, 2015-16, 2016-17)</td><td>Annual turnover from IT systems/ IT systems integration/ IT services/ ICT/ System integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC)

In case of consortium, aggregated turnover of the consortium may be considered with 50% (minimum) of the lead bidder

<table><tr><th>Turnover</th><th>Percentage</th></tr><tr><td>>100 crores to <= 150 crores</td><td>50</td></tr><tr><td>>150 crores to <= 200 crores</td><td>70</td></tr><tr><td>> 200 crores to <= 250 crores</td><td>100</td></tr></table></td><td>5</td><td>Audited statement for last 3 financial years of the sole bidder.
Audited statement for last 3 financial years of lead bidder & its member companies</td></tr>
<tr><td>A3</td><td>People in organization (Full time Employees – FTE in ICT projects)</td><td><table><tr><th>Number of FTE</th><th>Percentage</th></tr><tr><td>> 500 FTE</td><td>100</td></tr><tr><td>> 400 FTE to =< 500 FTE</td><td>90</td></tr><tr><td>> 300 FTE to =< 400 FTE</td><td>80</td></tr><tr><td>=< 300 FTE</td><td>70</td></tr></table></td><td>3</td><td>Submission of HR certificate stating the same</td></tr>
<tr><td>A4</td><td>The sole bidder or the lead bidder in a case of consortium, should possess any CMMi level certification</td><td>•
<table><tr><th>Profile</th><th>Marks Allotted</th></tr><tr><td>CMMi Level 5</td><td>3</td></tr><tr><td>CMMi Level 3</td><td>1</td></tr></table>
Copies of valid certificates in the name of sole bidder or the lead bidder in case of consortium</td><td>3</td><td>Valid certificates</td></tr>
<tr><td>A5</td><td>The sole bidder or the lead bidder in a case of consortium, should possess ISO certification</td><td>• ISO 20000:2011 for IT Service Management or equivalent certification – 1 Marks
• ISO 27001:2013 for Information Security Management System or equivalent certification – 1 Marks</td><td>2</td><td>Copies of valid certificates in the name of sole bidder or the lead bidder in case of consortium</td></tr>
<tr><td colspan="5">A. Project Experience of Bidder</td></tr>
</table>

<table>
<tr><th>#</th><th>Technical Evaluation Criteria</th><th>Technical Evaluation parameter</th><th>Points</th><th>Supporting documents required</th></tr>
<tr><td>B1</td><td>Design, Build and Maintainence of Command and control Centre</td><td>The bidder should have demonstrable expertise and experience of setting up or O&M of ICCC room/ data Centre/ Integrated city operation platform/ Emergency response Centre/ Security and Surveillance Control Room/ City Wide (NOC/SOC)/ Surveillance Control Room built for Highways, Railways, Airports, Campus, Private Firms and other government establishments etc. during last seven years (as on date of submission of bid) of minimum value of 5 crore each

<table><tr><th>Number of citations</th><th>Percentage</th></tr><tr><td>= 3 or >3</td><td>100</td></tr><tr><td>= 2</td><td>75</td></tr><tr><td>= 1</td><td>50</td></tr></table></td><td>5</td><td>Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.</td></tr>
<tr><td>B2</td><td>Implementation or Integration of ICT Applications</td><td>• The bidder should have demonstrable expertise and experience in implementation or integration of any 4 of the following smart features with the centralized system in the last 5 years
1. GIS
2. Parking System
3. Intelligent Bus Transport System
4. Fibre NOC
5. CCTV Camera
6. Traffic Signalization/ ANPR
7. Smart Lighting
8. ICT enabled Solid Waste management
• Each such project is considered as one unit
<table><tr><th>Number of units</th><th>Percentage</th></tr><tr><td>= 4 or >4</td><td>100</td></tr><tr><td>= 3</td><td>75</td></tr><tr><td>= 2</td><td>50</td></tr><tr><td>1</td><td>25</td></tr></table></td><td></td><td>Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.</td></tr>
<tr><td>B3</td><td>ICT based Solid Waste Management</td><td>• The bidder should have experience in executing ICT based Solid Waste Management projects in last 5 years (till years ending 31st March 2017).
• Points are allocated based on number of Projects executed
<table><tr><th>Number of Projects</th><th>Percentage</th></tr><tr><td>>= 3</td><td>100</td></tr><tr><td>= 2</td><td>75</td></tr><tr><td>= 1</td><td>50</td></tr></table></td><td>5</td><td>Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.</td></tr>
</table>

<table>
<tr><th>#</th><th>Technical Evaluation Criteria</th><th>Technical Evaluation parameter</th><th>Points</th><th>Supporting documents required</th></tr>
<tr><td>B4</td><td>Intelligent Traffic Management</td><td>• The bidder should have experience in executing Traffic Management (Signalization and/or ANPR) projects in last 5 years (as on date of submission of bid).
• Points are allocated based on number of units executed
<table><tr><th>Number of Units</th><th>Percentage</th></tr><tr><td>= 3 or >3</td><td>100</td></tr><tr><td>= 2</td><td>75</td></tr><tr><td>= 1</td><td>50</td></tr></table></td><td>5</td><td>Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.</td></tr>
<tr><td>B5</td><td>Smart parking</td><td>• The bidder should have experience in executing Smart parking projects in last 5 years (as on date of submission of bid).
• Points are allocated based on number of units executed
<table><tr><th>Number of units</th><th>Percentage</th></tr><tr><td>= 3 or >3</td><td>100</td></tr><tr><td>= 2</td><td>75</td></tr><tr><td>= 1</td><td>50</td></tr></table></td><td>5</td><td>Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.</td></tr>
<tr><td>B6</td><td>Smart Water metering</td><td>• The bidder should have experience in executing Smart Water metering projects in last 5 years (till years ending 31st March 2017).
• Points are allocated based on number of Projects executed
<table><tr><th>Number of Projects</th><th>Percentage</th></tr><tr><td>>= 3</td><td>100</td></tr><tr><td>= 2</td><td>75</td></tr><tr><td>= 1</td><td>50</td></tr></table></td><td>5</td><td>Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.</td></tr>
<tr><td colspan="5">B. Approach & Methodology & Project Presentation/Demonstration</td></tr>
<tr><td>C1</td><td>Approach & Methodology</td><td>• Following parameters will be evaluated:
<table><tr><th>Parameter</th><th>Percentage</th></tr><tr><td>Understanding of the project and conformity to Volume 2 functional requirement.</td><td>10</td></tr><tr><td>Detailed architecture plan encompassing all ICT elements proposed in volume 2</td><td>20</td></tr><tr><td>Completeness of project plan and ease of implementation (including training and change management plan)</td><td>10</td></tr><tr><td>Method of integration proposed with other IT initiative</td><td>15</td></tr><tr><td>Identification of major risks</td><td>10</td></tr></table></td><td>10</td><td></td></tr>
</table>

<table>
<tr><th>#</th><th>Technical Evaluation Criteria</th><th>Technical Evaluation parameter</th><th>Points</th><th>Supporting documents required</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><td>for the projects and also propose suitable mitigation plan for each of these risks</td><td></td></tr>
<tr><td>Strategy to maintain all the SLAs and handling change requests</td><td>10</td></tr>
<tr><td>Detailed Business Plan highlighting Revenue Streams for relevant smart elements</td><td>10</td></tr>
<tr><td>What will be the approach towards the scalability, interoperability and modularity features considering the future expansion of the projects? (The response to this question shall be given considering growth of Smart Cities as well as new applications or systems that may be envisaged/developed in future)</td><td>15</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>C2</td><td>Technical Demonstration / Proof of concept</td><td>Successful Demonstration/Proof of Concept: - Bidder need to demonstrate minimum 3 use cases like CCTV/ Surveillance/ Smart Parking/Smart Lighting/Environmental sensor/Smart Transport/SWM / Smart Utilities / Crowd monitoring etc. along with SMS, Email, GIS. in live environment.</td><td>15</td><td></td></tr>
<tr><td>C3</td><td>Presentation</td><td>The Bidder will need to exhibit proposed architecture, functional and non-functional requirements through presentation</td><td>5</td><td></td></tr>
<tr><td colspan="5">C. Proposed Resources for the Project</td></tr>
<tr><td>D1</td><td>People on project</td><td>Each of the following profiles suggested by the bidder will be evaluated:
<table>
<tr><th>Profile</th><th>Marks Allotted</th></tr>
<tr><td>Project Manager</td><td>4</td></tr>
<tr><td colspan="2">Functional Experts</td></tr>
<tr><td>Integrated Command and Control Centre Expert</td><td>4</td></tr>
<tr><td>Solid Waste Management Expert</td><td>2</td></tr>
<tr><td>Security/ Surveillance /IoT Expert</td><td>4</td></tr>
<tr><td>GIS Expert</td><td>2</td></tr>
<tr><td colspan="2">Technical Experts</td></tr>
<tr><td>Solution/ Lead Architect</td><td>4</td></tr>
</table>
</td><td>20</td><td></td></tr>
</table>

3.6.2 Key Personnel Criteria

LSI shall provide adequate number of personnel, each responsible for a specific role within the project. LSI shall provide clear definition of the role and responsibility of each individual personnel.

LSI shall have a defined hierarchy and reporting structure for various teams that shall be part of the project. LSI has to provide the list of proposed Manpower for the Project. Any changes in Manpower deployment will have to be approved by the Authority.

Following table indicates the minimum qualification required for Key Positions identified for this project. However, LSI shall independently estimate the team size and the necessary experts required to meet the requirements of Service Levels during implementation and O&M phase (2 Years) as specified as part of this tender. Except for Project Director, all other proposed positions shall be Onsite throughout the entire project implementation and O&M phase.

Sl #	Position	Minimum Qualifications & Experience	Nos
1.	Project Manager	a) Education: MBA/MCA/M. Tech & B. Tech/B.E. from a reputed institution b) Total Experience: Minimum 10 years in IT sector. c) Should have more than 8 years of experience of leading such large projects d) Certification: PMP	1
2.	Integrated Command and Control Centre (ICCC) Expert	a) Education: B.E/B.Tech from a reputed institute b) Total Experience : Minimum 10 years of experience in ICCC c) Should have experience of more than 2 projects as Control and Command Centre expert	1
3.	Solution Architect	a) Education: MCA/M. Tech/B. Tech/B.E. from a reputed institution b) Total Experience: Minimum 8 years in IT sector. c) Should have experience of more than 3 years as a Solution Architecture in large projects of similar nature	1
4.	Solid Waste Management Expert	a) BE/B.Tech or Graduation/Post Graduation from a recognized educational institution b) Experience: Minimum10 years. c) Should have experience in designing & implementing ICT base Solid Waste Management System for minimum 2 projects.	1

5.	Security / Surveillance /IoT Expert	a) B.Tech / M.Tech with atleast 8 years of experience b) Should have experience designing and implementing Surveillance solutions including IoT platform for atleast 2 projects. c)	1
6.	GIS Expert	a) B.Tech / M.Tech with at least 5 years experience in GIS Solution Implementation b) Should have experience in designing and implementing GIS solution for atleast 3 similar projects	1

Manpower plan for Implementation Phase to be provided as per format provided in 7.5.3 (I). Apart from the above –mentioned resources, the Bidder shall also provide adequate manpower to be deployed during the Operation & Maintenance phase of the Project as provided in the format 7.5.3 (II)

Notes:

The top three profile (Project Manager, Control and Command Centre Expert and Solution Architect) should be on the payroll of the Sole Bidder or the Lead Bidder

Manpower plan for Implementation Phase to be provided as per format provided in 7.5.3

(I) Apart from the above –mentioned resources, the Bidder shall also propose manpower to be deployed during the Operation & Maintenance phase of the Project as provided in the format 7.5.3

(II) (II) Any additional or support manpower shall be estimated and should be accounted for in the Commercial proposal by the selected bidder, so that, the project as per the scope defined and agreement are fulfilled and the project objectives are met.

Manpower Deployment

The city level Local System Integrator Bidder shall deploy Manpower during implementation and O&M phases. The deployed resource shall report to the Authority and work closely with Program Management Office of the project. Following are the minimum resources required to be deployed in the Project, however LSI shall deploy additional resources based on the need of the Project and to meet the defined SLAs, as required, in this RFP:

#	Type of Resource	Quantity	Minimum Deployment during Implementation phase	Minimum Deployment during Operation and Maintenance phase
1	**Project Manager**	1	At least 80%	100%
2	**Integrated Command and Control Center**	1	At least 80%	Onsite Support to Project team on need basis

#	Type of Resource	Quantity	Minimum Deployment during Implementation phase	Minimum Deployment during Operation and Maintenance phase
	(ICCC) Expert			
3	**Solution Architect**	1	At least 80%	Onsite Support to Project team on need basis
4	**Surveillance & IOT Expert**	1	At least 80%	100%
5	**Domain Expert**	1	At least 80%	100%
6	**GIS Expert**	1	At least 80%	100%

4. Award of Contract

4.1 Notification of Award

Authority will notify the successful Bidder in writing / e-mail to be confirmed by the bidder in writing / email.

4.2 Signing of Contract

After the notification of award, Authority will issue Letter of Intent (LOI) followed by Work Order (WO). Accordingly, a contract shall be signed between successful bidder and Authority or the agency designated by Authority. As an acceptance of the LOI and WO, the Bidder shall sign and return back a duplicate copy of the Purchase Order/Letter of Intent to Authority or the agency designated by the Authority. The bidder shall return the duplicate copy along with a Performance Bank Guarantee (i.e. Implementation PBG) within 15 working days from the date of issuance of Work Order.

On receipt of the Performance Bank Guarantee, Authority or the agency designated by Authority shall enter into a contract with the Successful Bidder. The Service Level Agreement (SLA) is provided in RFP Volume III. The contract shall include all the Terms and Conditions of the RFP, Corrigendum issued thereof if any and SLA shall be finalized & signed between the Authority and the Successful bidder within 30 working days from the date of issue of Work Order.

4.3 Performance Bank Guarantee (PBG)

The Successful Bidder shall submit the following Performance Bank Guarantees at his own expense submit unconditional and irrevocable Performance Bank Guarantee (PBG) to the Authority, GoK. The PBG shall be from a Nationalized Bank/Scheduled bank in the format prescribed in Section 9 - Annexure 7 (a), payable on demand at any of the bank branch at Hubballi , for the due performance and fulfilment of the contract by the bidder.

1. Implementation Performance Bank Guarantee (IPBG) shall be submitted within Twenty One (21) working days from the date of issuance of LOI, for an amount equivalent to 10% of the total CAPEX price (as mentioned in the Section 9 Annexure (7a) towards the implementation Phase, valid for a period of one year or Until Go-Live date whichever is later.
2. Operational Performance Bank Guarantee (OPBG) shall be submitted to the authority prior to expiry of the IBPG at least 3 months in advance, towards the Operation Phase for an amount equivalent to 10% of the total OPEX price (as mentioned in the Section 9 Annexure (7a) valid for a period of 5 years plus 60 days.

PBG shall be invoked by Authority, in the event the Bidder:

1. fails to meet the overall penalty condition as mentioned in RFP or any changes agreed between the parties,
2. fails to perform the responsibilities and obligations as set out in the RFP to the complete satisfaction of Authority,
3. Misrepresents facts/information submitted to Authority

The performance bank guarantee may be discharged/returned by Authority upon being satisfied that there has been due performance of the obligations of the bidder under the contract. However, no interest shall be payable on the performance bank guarantee.

In the event of the Bidder being unable to service the contract for whatever reason(s), Authority shall have the right to invoke the PBG. Not with standing and without prejudice to any rights whatsoever of Authority under the contract in the matter, the proceeds of the PBG shall be payable to Authority as compensation for any loss resulting from the bidder's failure to perform/comply its obligations under the contract.

In case the project is delayed beyond the project schedule as mentioned in RFP Vol II and all such delays accepted by the Authority, the implementation performance bank guarantee (IPBG) shall be accordingly extended by the Bidder till completion of scope of work as mentioned in RFP Volume II.

On satisfactory performance and completion of the order in all respects and duly certified to this effect by the Authority, Project Completion Certificate shall be issued and the IPBG would be returned to the Bidder after the receipt of OPGB an after deducting penalties, if any upon Go- live.

OPBG would be returned to the bidder upon completion of O&M of the project in all respect at the end of 5 years plus 60 days after deducting penalties, if any.

4.4 Warranty & Comprehensive Annual Maintenance

Bidder shall also provide comprehensive maintenance support for all the proposed integrated solution as outlined in this RFP for a period of Sixty months from the date of go-live i.e. "Go-Live" + 60 months.

"Go-live" is the date on which the proposed solution is completely operational as per the requirements provided in this RFP and all the acceptance tests are successfully concluded to the satisfaction of Authority.

The Bidder shall offer default warranty of three years (3) for all the supplied IT equipment & shall extend comprehensive Annual Maintenance Contract (AMC) services to cover additional two (2) years and for all the supplied.

During the warranty period, the bidder shall warrant that the goods supplied under the contract are new, defect free, unused at the time of delivery, and of the most recent version/models and incorporate all recent improvements in design and materials unless provided otherwise in the contract. The bidder further warrants that the goods supplied under this contract shall have no defects arising from design, materials or workmanship.

Authority or designated representatives of the bidder shall promptly notify Successful Bidder in writing of any claims arising under this warranty and AMC. Upon receipt of such notice, the Bidder shall, within the warranty and AMC period and with all reasonable speed, repair or replace the defective systems, without costs to Authority and within time specified and acceptable to Authority. Bidder shall extend the services of repair, replacement and preventive maintenance for entire contract period of 5 years from the date of Go-Live without costs to Authority meeting SLA.

If the Successful Bidder, having been notified, fails to remedy the defect(s) within the period specified in the contract, Authority may proceed to take such reasonable remedial action as may be necessary, at the Successful Bidder's risk and expense and without prejudice to any

other rights, which Authority may have against the Bidder under the Contract. Provided however that the Authority shall first give a prior reasonable notice to the Successful Bidder to rectify the default and only if the default continues even after the expiry of the cure period shall the Authority have the right to invoke this penalty clause as mentioned in RFP Vol III.

During the warranty and comprehensive AMC period, the successful bidder shall provide all product(s) and documentation updates, patches/fixes, and version upgrades within 15 days of their availability and should carry out installation and make operational the same at no additional cost to Authority meeting SLA.

The Successful Bidder hereby warrants Authority that

I. The implemented integrated solution represents a complete, integrated solution meeting all the requirements as outlined in the RFP and further amendments if any and provides the functionality and performance, as per the terms and conditions specified in the contract.

II. The proposed integrated solution shall achieve parameters delineated in the technical specification/requirement.

III. The Successful Bidder shall be responsible for warranty services from licensers of products included in the systems.

IV. The Successful Bidder undertakes to ensure the maintenance of the acceptance criterion/standards in respect of the systems during the warranty and comprehensive AMC period.

4.5 Failure to agree with the Terms & Conditions of the RFP

Failure of the Successful Bidder to agree with the Terms & Conditions of the RFP shall constitute sufficient grounds for the annulment of the award, in which event Authority may award the contract to the next best value bidder or call for new bids at the risk and cost of the Successful Bidder.

In such a case, Authority shall also invoke the PBG and/or forfeit the EMD.

5. Annexure 1 – Template for Pre-Bid Queries

Bidder shall submit all Pre-Bid Queries in excel (soft copy) in the following format.

Sl. No.	RFP Volume, Section	RFP Page No.	Content in the RFP	Clarification Sought

6. Annexure 2 – Formats for Submission of the Pre-Qualification Bid

6.1 Pre-Qualification bid checklist

#	Eligibility Criteria	Document Proof	Compliance (Y/N)	Doc ref
1	• The Sole Bidder or the Lead Bidder of Consortium must be registered company in India and should be in the business & have been operational at least for last 5 years as on date of bid submission.	▪ Copy of Certificate of Incorporation / Registration under companies Act, 1956/2013 and its subsequent amendments. ▪ Memorandum and Articles of Association ▪ GST registration certificate ▪ Copy of purchase orders showing at least 5 years of operations OR Certified true copy of relevant extracts of balance sheet and PL statements for last 5 years. For Consortium members • GST registration certificate • PAN • Consortium agreement/MoU clearly stating the roles and responsibilities and scope of works of each member/ partner company.		**QP – 1(1)**
2	The Sole Bidder/ Lead Bidder should have an average annual turnover of INR 80 Crore from the operations which includes at least any one activities from the list "IT systems/ IT systems integration/ IT services/ ICT/ System integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC)" in over last 3 audited financial	• Audited statement for last 3 financial years of the sole bidder. Audited statement for last 3 financial years of lead bidder and its member companies. Certificate from the Chartered Accountant/ statutory auditor/ Company Secretary clearly specifying the annual turnover from the operations which includes at least any one activities from "IT systems/ IT systems integration/ IT services/ ICT/ System	•	**QP – 1(2)**

	years from the date of NIT In case of a consortium, the Lead Bidder should have average annual turnover of at least 50% of the total turnover. The combined average annual turnover of the Lead Bidder and Consortium company/companies shall be minimum of Rs 80 Crores.	integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC)" for the specified years. (Applicable to sole bidder or lead bidder) Certificate from the Chartered Accountant/ statutory auditor/ Company Secretary clearly specifying the annual turnover from the operations which includes at least one activity from "IT systems/ IT systems integration/ IT services/ ICT/ System integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC)" for the specified years. (Applicable to consortium member companies)		
3	The sole bidder or the consortium should have a positive net worth for the previous 3 financial years from the date of NIT	Audited and certified Balance Sheet and Profit/Loss Account of the previous 3 financial year Certificate from the statutory auditor/ Company secretary clearly specifying the Net worth of the firm for the specified year to be provided.		**QP – 1(3)**
4	As on date of the submission of the proposal, the sole bidder or the consortium should not be black listed or debarred by Central/State governments/PSU in India	Undertaking from the authorized signatory of the bidder (in case of Consortium, to be provided by each member) as per the format in Section 6.4	•	**QP – 1(4)**
5	The Sole Bidder or lead bidder of the Consortium should possess relevant CMMi level 3 and or relevant ISO Certifications which are	Copies of the relevant certifications.		**QP – 1(5)**

	valid at the time of bidding			
6	The Sole Bidder or the Consortium should have experience in executing at least 2 nos. of ICT projects which includes any of the following areas during last 5 years as on bid submission date: Value of each project should be minimum of Rs. 5 Crore 1. Smart Transport 2. ICT based SWM 3. Variable messaging system/public address system. 4. E-Governance applications 5. Smart utilities like water/UGD 6. Smart parking/smart lighting 7. Surveillance 8. Emergency Response system Other applications as per City requirement.	Copies of work order, Client certificate indicating satisfactory completion of the Project and other relevant documents. Note: 1. The date of work order should be at least 6 months before the date of release of this RFP. 2. In case of ongoing projects, the project must have achieved 80% of the capex completion from financial & physical perspective. 3. In case the experience shown is that of bidder's parent/subsidiary/ sisters concern company, then the following additional documents are required a. Letter from Company Secretary of the bidder certifying that the entity whose experience shown is parent/subsidiary/sister concern company b. Share holding pattern of the bidding entity as per audit report		**QP – 1(6)**
7	The Sole bidder or the Consortium must have on its pay roll a team of 10 or more technically qualified professionals.	Self-Certification from the bidder for the number of technically qualified professionals employed in the company with their qualification and skill set. (Applicable to sole bidder or lead bidder of consortium or its member company)		**QP – 1(7)**

6.2 Pre-Qualification Bid Covering Letter

Date: dd / mm / yyyy

To,

The Managing Director,

Hubballi Dharwad Smart City Limited,

Hubballi

Sub: Request for Proposal for {Name of the Project}

Ref: RFP No. **<<.....>> dated << .....>>**

Dear Sir,

With reference to your "**Sub: Request for Proposal for {Name of the Project}"**, we hereby submit our Prequalification bid, Technical Bid and Commercial Bid for the same.

We hereby declare that:

a. We hereby acknowledge and unconditionally accept that the Authority can at its absolute discretion apply whatever criteria it deems appropriate, not just limiting to those criteria set out in the RFP and related documents, in short listing of Agency for providing services.

b. We have submitted EMD of Rs..... and Tender processing fee of Rs..... online through e-procurement portal.

c. We hereby declare that all information and details furnished by us in the Bid are true and correct, and all documents accompanying such application are true copies of their respective originals.

d. We agree to abide by our offer for a period of 180 days from the bid due date**, which can be further extendable upon request by the Authority,** and that we shall remain bound by a communication of acceptance within that time.

e. We have carefully read and understood the terms and conditions of the RFP and the conditions of the contract applicable to the RFP. We do hereby undertake to provision as per these terms and conditions.

f. In the event of acceptance of our bid, we do hereby undertake:

   i. To supply the products and commence services as stipulated in the RFP document

   ii. To undertake the project services for entire contract period from the date of signing of the contract as mentioned in the RFP document.

   iii. We affirm that the prices quoted are inclusive of design, development, delivery, installation, commissioning, training, providing facility management and handholding support, and inclusive of all out of pocket expenses, taxes, levies discounts etc.

g. We do hereby undertake, that, until a formal contract is prepared and executed, this bid, together with your written acceptance thereof and notification of award of

contract, shall constitute a binding contract between us.

h. We understand that the Authority may cancel the bidding process at any time and that Authority is not bound to accept any bid that it may receive without incurring any liability towards the bidder.

i. We fully understand and agree to comply that on verification, if any of the information provided in our bid is found to be misleading the selection process, we are liable to be dismissed from the selection process or termination of the contract during the project, if selected to do so .

In case of any clarification please contact Mr / Ms .....at email at .....

Thanking You,

Yours sincerely,

(Signature of the Lead bidder)

Printed Name
Designation

Seal

Date:
Place:

Business Address:

6.3 Company profile

A. Brief company profile *(Sole Bidder or Lead Bidder and its consortium member companies)*

(To be provided on the Company letterhead)

Sl. No.	Particulars	Description or Details
1	Name of Bidder	
2	Legal status of Bidder (company, Pvt. Ltd., etc.)	
3	Main business of the Bidder	
4	Registered office address	
5	Incorporation date and number	
6	GST Registration	
7	PAN details	
8	Primary Contact Person (Name, Designation, address, mobile number, fax, email)	
9	Secondary Contact Person (Name, Designation, address, mobile number, fax, email)	
10	EMD details	
11	Role in Consortium (if applicable)	Brief scope of work in the consortium

B. Certificate of Incorporation

C. Financial Turnover

The financial turnover of the company is provided as follows:

	2014 - 15	2015 -16	2016 -17
Annual Turnover			

Copy of audited financial statements or declaration from the appointed statutory auditor to be provided as proof of the financial turnover

Positive net worth of the last three financial years as on from the date of NIT. Copy of statutory auditor certificate to be submitted along with the bid

D. Certifications

Provide copy of valid certification for ISO 9001, ISO 27001 and ISO 20000 certifications and CMMI Level 3 or above and TIER III Datacenter certification of the previous projects executed as required in Pre-Qualification criteria as on date of NIT.

6.4 Declaration ofNon-Blacklisting

6.4.A Declaration for Sole Bidder/ Lead Bidder

(To be provided on the Company letter head)

:

Place
Date

To,

[ ]

Subject: Self-Declaration of not been blacklisted/debarred in response to the "**Request for Proposal for {Name of the Project}"**

Ref: RFP No. <<.....>> **dated** <<.....>>
Dear Sir,

We confirm that our company or firm, _____, is currently not blacklisted/debarred in any manner whatsoever by any of the State or UT or PSU or Central Government in India on any ground including but not limited to indulgence in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

(Signature of the Lead Bidder)

Printed Name
Designation
Seal

Date:
Place:

Business Address:

6.4.B Declaration for Consortium Members:

(To be provided on the Company letter head)

{Place}

{Date}

To,

[ ]

Subject: Self-Declaration of not been blacklisted/debarred in response to the "**Request for Proposal for {Name of the Project}"**

Ref: RFP No. **<<.....>> dated << .....>>**

Dear Sir,

We confirm that our company or firm,_____,is currently not blacklisted/debarred in any manner whatsoever by any of the State or UT or PSU or Central Government in India on any ground including but not limited to indulgence in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.

(Signature of the Consortium Member)

Printed Name
Designation

Seal Date:

Place: Business Address:

6.5 No Deviation Certificate

(To be provided on the Company letter head)

This is to certify that our offer is exactly in-line with your tender enquiry/RFP (including amendments) no. dated .

This is to expressly certify that our offer contains no deviation with respect to Authority requirements, Technical Specification, Hardware Specification, Functional Requirement and Scope of Work.

(Authorized Signatory)

Signature:

Name:

Designation:

Address:

Seal:

Date:

6.6 Total ResponsibilityCertificate

This is to certify that we undertake the total responsibility for the defect free operation of the proposed solutions as per the requirement of the RFP for the duration mentioned in all the volumes of theRFP.

(Authorized Signatory)

Signature:

Name:

Designation:

Address:

Seal:

Date:

6.7 Self-certificate for Project execution experience (In Bidding Entity's Letter Head)

This is to certify that < Name of the Bidding entity > has been awarded with < Name of the Project > as detailed under:

Name of the Project	
Client's Name, Contact no. and Complete Address	
Contract Value for the bidder (in INR)	
Current status of the project (Completed/Ongoing)	
Activities completed by bidding entity as on bid submission date *N.B Only relevant activities as sought in the criteria to be included*	
Value of Work completed for which payment has been received from the client	
Date of Start	
Date of Completion	

(Authorized Signatory)

Signature:

Name:

Designation:

Bidding entity's name

Address:
Seal: Date:

7. Annexure 3 – Formats for Submission of the Technical Bid

7.1 Technical Bid Check-List

#	Technical Evaluation Criteria	Supporting documents required	Compliance (Y/N)	Doc Ref
A.	***Bidders Experience & Organization Strength***			
A1	The Bidder (or any consortium member) should have demonstrable expertise and experience in executing large ICT projects during last seven years as on 31st march 2017	Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project		***TB – 1(1)***
A2	Annual turnover from IT systems/ IT systems integration/ IT services/ ICT/ System integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC) In case of consortium, aggregated turnover of the consortium may be considered with 50% (minimum) of the lead bidder	Audited statement for last 3 financial years of the sole bidder. Audited statement for last 3 financial years of lead bidder and its member companies.		***TB – 1(2)***
A3	People in organization (Full time Employees – FTE in ICT projects) Submission of HR certificate stating the same	HR Certification on Company Letterhead for Sole Bidder/Lead Bidder		***TB – 1(3)***
A4	The sole bidder or the lead bidder in a case of consortium, should possess any CMMi level certification	Copies of valid certificates in the name of sole bidder or the lead bidder in case of consortium		***TB – 1(4)***
A5	The sole bidder or the lead bidder in a case of consortium, should possess ISO certification	Copies of valid certificates in the name of sole bidder or the lead bidder in case of consortium		***TB – 1(5)***

#	Technical Evaluation Criteria	Supporting documents required	Compliance (Y/N)	Doc Ref
Project Experience of Bidder				
B1	The bidder should have demonstrable expertise and experience of setting up or O&M of ICCC room/ data Centre/ Integrated city operation platform/ Emergency response Centre/ Security and Surveillance Control Room/ City Wide (NOC/SOC)/ Surveillance Control Room built for Highways, Railways, Airports, Campus, Private Firms and other government establishments etc. during last seven years (as on date of submission of bid) of minimum value of 5 crore each	Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.		***TB – 1(6)***
B2	• The bidder should have demonstrable expertise and experience in implementation or integration of any 4 of the following smart features with the centralized system in the last 5 years 1. GIS 2. Parking System 3. Intelligent Bus Transport System 4. Fibre NOC 5. CCTV Camera 6. Traffic Signalization/ Traffic Enforcement SystemANPR/E-Challan 7. Smart Lighting 8. ICT enabled Solid Waste management Each such project is considered as one unit	Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.		***TB – 1 (7)***
B3	The bidder should have experience in executing ICT based Solid Waste Management projects in last 5 years (till years ending 31st March 2017).	Copies of Work orders, contract agreements, Client Certificate indicating satisfactory completion of the project.		***TB – 1(8)***

#	Technical Evaluation Criteria	Supporting documents required	Compliance (Y/N)	Doc Ref
B4	The bidder should have experience in executing Traffic Management (Signalization and/or ANPR) projects in last 5 years (as on date of submission of bid).	*Copies of Work orders, contract agreements, Client* *Certificate indicating satisfactory completion of the project.*		***TB – 1(9)***
B5	e bidder should have experience in executing Smart parking projects in last 5 years (as on date of submission of bid).	*Copies of Work orders, contract agreements, Client* *Certificate indicating satisfactory completion of the project.*		***TB – 1(10)***
B6	e bidder should have experience in executing Smart Water metering projects in last 5 years (till years ending 31st March 2017).	*Copies of Work orders, contract agreements, Client* *tificate indicating satisfactory completion of the project.*		***TB – 1 (11)***
Approach & Methodology & Project Presentation/Demonstration				
C1	Approach & Methodology covering understanding of the project, FRS, TRS, scope & deliverables etc. Provide White paper, Case study, Best practices developed in the past to demonstrate client experience.			***TB – 1(12)***
Proposed Resources for the Project				
D1	People on project			***TB – 1 (13)***

7.2 Technical Bid Covering Letter

To, **Date :**

Subject : "Request for Proposal for {Name of the project}".

Ref: RFP No. **<<.....>> dated << .....>>**

Dear Sir,

I (in case of single bidder) or We, <<name of the undersigned Bidder and consortium members>>, having read and examined in detail all the bidding documents in respect of "**Request for Proposal {Name of the project}"** do hereby propose to provide our services as specified in the bid submitted by us.

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.

We declare that all the services shall be performed strictly in accordance with the RFP documents.

We confirm that the information contained in this response or any part thereof, including its exhibits, and other documents and instruments delivered or to be delivered to Authority, Government of Karnataka is true, accurate, verifiable and complete. This response includes all information necessary to ensure that the statements therein do not in whole or in part mislead the department in its evaluation process. We also confirm that we shall not attract conflict of interest in principle.

We hereby declare that in case the contract is awarded to us, we shall submit the contract Performance bank guarantee in the form prescribed at Annexure 7 (a) of Section 9 of the RFP Volume I.

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

We understand that our bid is binding on us and that you are not bound to accept a bid you receive. This bid is valid for 180 days from bid due date. We shall extend the validity of the bid if required by Authority.

Thanking you,
Yours sincerely,

(Signature of the Sole Bidder/Lead Bidder)

Printed Name
Designation

Seal

Date:
Place:

Business Address:

7.3 Credential Summary

Sl.No	Project Name	Client Name	Client Type	Project Value (in INR)	Project Components	Documentary evidence provided (Yes or No)	Project Status (Completed or Ongoing or Withheld)
1							
2							
3							
4							
5							
6							
7							

- Client type – Indicate whether the client is Government or PSU or Private

- Project Components – Indicate the major project components like setting up of IT systems/ IT systems integration/ IT services/ ICT/ System integration services/ communication infrastructure/ city surveillance/ ICT based utility management/ Transport management/ command & control center implementation/ Network operating center (NOC)
- Documentary evidence provided – Indicate the documentary evidence provided with the detailed project credential like work order or purchase order and completion certificate or letter of appointment in English language.
- Project Status – Completed (date of project completion) or Ongoing (project start date, physical and financial progress)

7.4 Bidder's Experience - Client Citations

Sole Bidder or Lead bidder in case of Consortium is requested to furnish the credentials in the following format for both Pre-Qualification and Technical Criteria. All credentials should be followed by relevant documentary proof.

Name of the Project & Location	
Client's Name and Complete Address	
Narrative description of Project	
Contract Value for the bidder (in INR)	
Date of Start	
Date of Completion	
Activities undertaken by prime bidder or consortium member	

Note - If the project is ongoing, bidder must clearly specify which of the stages/phases/milestones are completed and which are ongoing and at what stage of completion and produce a self-certificate as per the format provided in Section 6.7.

7.5 Overviewof Proposed Solution

7.5.1 Structure of Proposed Solution

Bidders are required to provide a detailed presentation covering the following to execute the entire project. Bidders are advised to comply with the below provided headers/Approach components while detailing out their solution.

Sl.No	Item
1	Understanding of the project and Conformity to Volume 2 functional requirement
2	Detailed Architecture plan encompassing all ICT elements proposed in Volume 2
3	Completeness of project plan and ease of implementation (including training and change management plan)
4	Method of integration proposed with other IT initiative
5	Identification of major risks for the projects and suitable mitigation plan proposed for each of these risks
6	Strategy to maintain all the SLAs and handling change requests
7	Detailed Business Plan highlighting Revenue Streams for relevant smart elements
8	What will be the approach towards the scalability, interoperability and modularity features considering the future expansion of the projects? (The response to this question shall be given considering growth of Smart Cities as well as new applications or systems that may be envisaged/developed in future)
9	Approach towards testing and quality
10	How SLAs mentioned under this RFP will be measured? What tools will be used for SLA measurement?
11	Proposed solution ensures the fool proof security to the system from various threats including hacking attempts, internal threats, etc. Please explain in detail approach towards the security of the overall solution from external and internal threats
12	What are the key learning from the similar projects and how do you propose to incorporate them in executing this assignment.
13	Assessment of Manpower deployment, Training and Handholding plan • Deployment strategy ofManpower • Contingency management • Mobilization of existing resources and additional resources as required • Training and handholdingstrategy

Note: The same shall cover all the points mentioned in 3.6.1.C

7.5.2 Project Plan

A **Detailed Project Plan** covering break-up of each phase into the key activities, along with the start and end dates must be provided as per format given below.

Activity-Wise Timelines							
Sl.No	**Item of Activity**	**Month-wise Program**					
		1	2	3	4	5	…
	Project Plan						
1	Activity 1						
1.1	Sub-Activity 1						
1.2	Sub-Activity 2						
2							
2.1							
2.2							
3							
3.1							
4							

Note: The above activity chart is just for the purpose of illustration. Bidders are requested to provide detailed activity & phase wise timelines for executing the project with details of deliverables & milestones as per their bid.

7.5.3 Manpower Plan

I. Till Go-Live (Implementation)

Manpower distribution									
Sl.No.	**Role**	**Month wise time to be spent by each personnel (in days)**						**Total**	
		Month 1	Month 2	Month 3	.....	.....	Month 12		
1	Project Manager								
2	Solution Architect (DC)								Onsite
3	Enterprise Architect / IOT Expert								Onsite
4	Networking Architect								Onsite
5	<Add more rows as required>								Onsite
Total									

II. after Go-Live (Operation & Maintenance)

Manpower distribution								
Sl.No.	**Manpower**	**Years**					**Total**	
		Year 1	Year 2	Year 3	Year 4	Year 5		
1								Onsite/Offsite
2								Onsite/Offsite
3	<Add more rows as required>							Onsite/Offsite
Total								

7.6 Details of Resources proposed

7.6.1 Summary of Resources proposed

SL. No	Name of the Resource	Proposed Role	Highest Degree	Basic Qualification (E.g. B.E./MTech or MCA	Certifications (eg. PMP or "ITIL or CCNP etc.	Total Experience (in Years)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

7.7 Curriculum Vitae (CV) of Team Members

	Name:					
1.	**Proposed position or role**					
2.	**Date of Birth**		**Nationality**			
3	**Education**	**Qualification**	**Name of School or College or University**		**Degree Obtained**	**Year of passing**
4.	**Years of experience**	*(as required for the Profile)*				
5.	**Areas of Expertise and no. of years of experience in this area**					
6.	**Certifications and Trainings attended**					
7.	**Employment Record**	**Employer**		**Position**	**From**	
		[*Starting with recent for each employment: dates of employment, name of employing Organization, positions held.*]		*position and last 2 firms, list in reverse order, giving*		
8	Detailed Tasks Assigned	*(List all tasks to be performed under this project*)				
9	**Relevant Work Undertaken that Best Illustrates the experience as required for the Role***)*					

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	

7.8 Compliance to Requirement (Technical Requirements Specifications-TRS/ Functional Requirements Specifications –FRS)

The bidder should provide compliance to the requirement specifications (both technical and functional) specified in the Annexures of the Volume II of this RFP. The same should be reproduced here, and compliance against each requirement line item should be marked. .

Note: A no for full compliance for any items in above table is considered as non-responsive, bids will not be further evaluated and will be rejected.

7.9 Proposed Bill ofMaterial

The Bidder should provide the proposed Bill of Material (BoM) here. Bidders are required to mention the details of the make/brand and model against each line item, wherever applicable. The bid can be considered non-responsive in the absence of such details. Once the bidder provides this information in the submitted bid, the bidder cannot change it with any other component / equipmentetc.oflower specifications / performance; it can only be upgraded at the time of actual deployment/installation. The Bidder shall quote only one specific make and model from only one specific OEM, for each of the goods. Providing more than one option shall not be allowed.

The list of items mentioned hereunder is indicative. The Bidder shall consider the components and quantity to fulfill the RFP and project requirements in totality. The BoM (Annexure-4) shall comply with the FRS and TRS given in Vol.2 of the RFP.

7.9.1 Annexure 4 - Bill of Material for command and control centre.

No.	BoM Lime Item	Qty at temporary site	Additional Qty required	Total Qty		Make/ Brand	Model Details	Full compliance with RFP
A								
A.1	Video Wall Cubes (70 inch each)	8	4	12				
A.2	Video Wall Controller with Wall Management System	1	NA	1				
B								
B.1	Call Center Software	1	NA	1				
C								
C.1	Multi-Function Laser Printer (City Control Room)	2	NA	2				
C.2	Operator Workstations (City Control Room)	16	NA	16				
C.3	IP Phones	25	NA	25				
C.4	Digital Set top boxes	1	2	3				
C.5	Television Set (Meeting room + Conference Room)	1	2	3				
C.6	Office Desktop	5	NA	5				
D								
D.1	55" LED display to present critical information Display	2	NA	2				
D.2	Video Conferencing Unit	1	NA	1				
E								
E.1	IP PABX System	1	NA	1				
E.2	PRI Modem pair	2	NA	2				
F								
F.1	LAN and CAT-6 cabling	1	NA	1				
F.2	Public Address System	1	NA	1				
F.4	PTZ Cameras	3	3	6				
F.5	Fixed Dome Cameras with 32 Channel NVR	6	6	12				
G								
G.1	DTH Subscription	1	NA	1				
G.2	PRI Lines	1	NA	1				
H								
H.1	Contact Centre Operators	12	NA	12				
I								
I.1	L2 Switch (48 Ports)	2	NA	2				

No.	BoM Lime Item	Qty at temporary site	Additional Qty required	Total Qty		Make/ Brand	Model Details	Full compliance with RFP
I.2	MPLS Router	2	NA	2				
I.3	Networking/IT Racks	2	NA	2				
I.4	Core Switch/ Data Center Switch	2	NA	2				

7.9.2 Annexure 4 - Bill of Material for ICT based Solid Waste Management.

No.	BoM Lime Item	Total Qty.		Make/Brand	Model Details	Full compliance with RFP
A	**RFID Tagging and Bin Level Sensors**					
A.1	Door to Door RFID	300000				
A.2	RFID Readers	134				
A.3	GPS Trackers	165				
A.4	CCTV Cameras (PTZ)	120				
A.5	Fuel Sensors (only for HDMC vehicles)	21				
B	**Application Development and Geocoding**					
B.1	Software Application (Web/Mobile compatible	1				
B.2	Development, Customization, Integration of integrated SWM solution	1				
B.3	Geocoding / Geofencing / Survey of sites (Offices / dumping grounds / stations / bins)	20				
C	**Training**					
C.1	Training of Users including documentation/ Capacity Building	1				
D	**O&M**					
D.1	Maintenance cost for all hardware & devices (for 5 years from date of Go-Live)	Lumpsum				
D.2	Maintenance cost for all software & licenses and application support (for 5 years from date of Go-Live)	Lumpsum				
D	**Cam Connectivity for SWM**					
D.1	Network connectivity from SWM cameras to PoP	120				
D.2	Network connectivity to ICCC of 480 MBPS	1 (480 MBPS)				

7.9.3 Annexure 4 - Bill of Material for ICT intervention in ABD area.

No.	BoM Lime Item	Total Qty.		Make/ Brand	Model Details	Full compliance with RFP
A	**Junction Improvement**					
A.1	CCTV Cameras	12				
A.2	Network connectivity from SWM cameras to PoP	12				
A.3	Network connectivity to ICCC	1 (48 MBPS)				
B	**Nehru Stadium**					
B.1	CCTV Cameras	15				
B.2	Network connectivity from	15				

No.	BoM Lime Item	Total Qty.		Make/ Brand	Model Details	Full compliance with RFP
	SWM cameras to PoP					
B.3	Network connectivity to ICCC	1 (60 MBPS)				
C	**Lakefront Development**					
C.1	CCTV Cameras	15				
C.2	Network connectivity from SWM cameras to PoP	15				
C.3	Network connectivity to ICCC	1 (60 MBPS)				
D	**MG Park**					
D.1	CCTV Cameras	12				
D.2	Network connectivity from SWM cameras to PoP	12				
D.3	Network connectivity to ICCC	1 (48 MBPS)				

7.9.4 Annexure 4 - Bill of Material for Fire and Emergency Management

No.	BoM Lime Item	Total Qty.		Make/ Brand	Model Details	Full compliance with RFP
A	**Vehicle Tracking**					
A.1	GPS Trackers	8				

7.10 Manufacturers'/Producers' Authorization Form

(This form has to be provided by the OEMs of the hardware and software solutions proposed. This letter of authority 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,

[ ],

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 centers 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 5 Years from the date of bidding and the support for such offered product/s will be available for minimum of 5 years from the date of bidding.

Thanking you,
Yours faithfully,
(Signature)

For and on behalf of:_____(Name of the OEM)
Authorized Signatory

Name:
Designation:
Place:

Date:

7.11 Anti-Collusion Certificate

[Certificate should be provided by Lead Bidder and on letter head]

Anti-Collusion Certificate

We hereby certify and confirm that in the preparation and submission of our Bid for "**Request for Proposal for {Name of the Project}**" against the RFP issued by Authority, We have not acted in concert or in collusion with any other Bidder or other person(s) and also not done any act, deed or thing, which is or could be regarded as anti- competitive. We further confirm that we have not offered nor will offer any illegal gratification in cash or kind to any person or organization in connection with the instant bid.

(Signature of the Lead Bidder)

Printed Name
Designation

Seal

Date

Place

Business Address

7.12 Details of additional components mentioned as "Others" in the BOQ

The Bidder may provide the additional line items in the proposed Bill of Material (BoM), in addition to the line items mentioned in the financial format in this RFP. Bidders are required to mention the details of the make/brand and model against each line item, wherever applicable. The bid can be considered non-responsive in the absence of such details. In case, no additional bill of quantity is proposed, the Bidder shall mention Rs. 1 (Rupee One) in the respective line item and in which case, the same will not be considered for the purpose of financial evaluation. Once the bidder provides this information in the submitted bid, the bidder cannot change it with any other component / equipment etc. of lower specifications / performance; it can only be upgraded at the time of actual deployment/ installation. The Bidder shall quote only one specific make and model from only one specific OEM, for each of the goods. Providing more than one option shall not be allowed.

7.12.1 Additional Bill of Quantity

Sl. No.	Description	UoM	Qty
1	Item 1		
2	Item 2		
3	Item 3		
4	Item 4		
5	Item 5		
6	Item 6		
	.		
	.		

Note:

The Bidder shall specify all additional line items proposed by him in the above specified format.

However, in the e-procurement portal, the total price for all additional items proposed shall be indicated in the last line items designated as "***Others***".

The successful bidder shall provide the price break-up for all such additional items proposed by him, before conclusion of contract agreement.

7.13 Tax Format

Bidders are required to provide the details of the applicable tax component considered against each line item and also for additional bill of quantity (as per Section 7.12), wherever applicable. The bid shall be considered non-responsive in the absence of these details. These details shall be used only for reference purpose and shall not be considered for the evaluation.

However, for evaluation purpose, total price, exclusive of taxes, shall be considered for identification of least bidder and according appointment of System Integrator. The taxes as per actual shall be paid by the Authority during the project period, upon submission of original invoice for line items and additional line items, as applicable.

7.13.1 Format for Tax

No.	BoM Lime Item	GST Tax % age
A.1	Video Wall Cubes (70 inch each)	
A.2	Video Wall Controller with Wall Management System	
B.1	Call Center Software	
C.1	Multi-Function Laser Printer (City Control Room)	
C.2	Operator Workstations (City Control Room)	
C.3	IP Phones	
C.4	Digital Set top boxes	
C.5	Television Set (Meeting room + Conference Room)	
C.6	Office Desktop	
D.1	55” LED display to present critical information Display	
D.2	Video Conferencing Unit	
E.1	IP PABX System	
E.2	PRI Modem pair	
F.1	LAN and CAT-6 cabling	
F.2	Public Address System	
F.4	PTZ Cameras	
F.5	Fixed Dome Cameras with 32 Channel NVR	
G.1	DTH Subscription	
G.2	PRI Lines	
H.1	Contact Centre Operators	
I.1	L2 Switch (48 Ports)	
I.2	MPLS Router	
I.3	Networking/IT Racks	
I.4	Core Switch/ Data Center Switch	
	RFID Tagging and Bin Level Sensors	
A.1	Door to Door RFID	
A.2	RFID Readers	
A.3	GPS Trackers	
A.4	CCTV Cameras (PTZ)	

No.	BoM Lime Item	GST Tax % age
A.5	Fuel Sensors (only for HDMC vehicles)	
B	Application Development and Geocoding	
B.1	Software Application (Web/Mobile compatible	
B.2	Development, Customization, Integration of integrated SWM solution	
B.3	Geocoding / Geofencing / Survey of sites (Offices / dumping grounds / stations / bins)	
C	Training	
C.1	Training of Users including documentation/ Capacity Building	
D	O&M	
D.1	Maintenance cost for all hardware & devices (for 5 years from date of Go-Live)	
D.2	Maintenance cost for all software & licenses and application support (for 5 years from date of Go-Live)	
D	Cam Connectivity for SWM	
D.1	Network connectivity from SWM cameras to PoP	
D.2	Network connectivity to ICCC of 480 MBPS	
A	Junction Improvement	
A.1	CCTV Cameras	
A.2	Network connectivity from SWM cameras to PoP	
A.3	Network connectivity to ICCC	
B	Nehru Stadium	
B.1	CCTV Cameras	
B.2	Network connectivity from SWM cameras to PoP	
B.3	Network connectivity to ICCC	
C	Lakefront Development	
C.1	CCTV Cameras	
C.2	Network connectivity from SWM cameras to PoP	
C.3	Network connectivity to ICCC	
D	MG Park	
D.1	CCTV Cameras	
D.2	Network connectivity from SWM cameras to PoP	
D.3	Network connectivity to ICCC	
A	Vehicle Tracking	
A.1	GPS Trackers	

Note:

The Bidder shall quote **only** the tax rate **in percentage** for all line items.

NO financial values shall be indicated against the line items. Failure to do so, shall result in rejection of the Bid as non-responsive.

8. Annexure 5 – Formats for Submission of the Commercial Bid

(a) Bidder should provide all prices as per the prescribed format under this Annexure. Bidder should not leave any field blank. In case the field is not applicable, Bidder must indicate "1" (One) in all such fields.

(b) Bidder should quote his price for each of the line item in the e-procurement portal.

- In the e-procurement portal, Bidder should enter the Unit Rate, excluding tax, for that particular line item.

(c) All the prices against each Line Items must be exclusive of any Taxes and are to be entered in Indian Rupees ONLY (% values are not allowed) in the e-procurement portal

(d) It is mandatory to provide breakup of all Taxes, Duties and Levies wherever applicable and/or payable in the separate annexure 7.13 with Technical Bid. However, Authority shall consider Grand Total (Capex Price + Opex Price with NPV) exclusive of applicable taxes etc. for evaluation purpose and arriving at L1 price.

(e) Authority reserves the right to ask the Bidder to submit proof of payment against any of the taxes, duties, levies indicated.

8.1. Annexure 6 - Price Component for CAPEX

(Available in e-Procurement Portal, shall be quoted in price schedule on e-portal only):

8.2. Annexure 7 - Price Component for OPEX

The list of items indicated hereunder is indicative. The Bidder shall consider any additional line items with adequate details and pricing information in the table below, that may be required to fulfill the project requirements and functionality in totality.

- In order to equitably compare different AMC charges for different years, NPV (Net Present Value) would be used at rate of discounting (rd) to bring the AMC cost at the same footing in the assessment of Grand Total price.
- Bidder shall quote AMC cost for Hardware equipment from 4^{th} year onwards, considering the capex price quoted shall cover warranty for all the Hardware equipment for the first 3 years (year-1 to year-3).
- Bidder shall quote O&M support cost for all the 5 years.

(Available in e-Procurement Portal, shall be quoted in price schedule on e-portal only):

9. Annexure 7 (a) – Performance Bank Guarantee

Ref:_____ Date _____

Bank Guarantee No. _____

<Name>

<Designation>

<Address> <Phone Nos.> <Fax Nos.> <Email id>

Whereas, <<name of the supplier and address>> (hereinafter called "the System Integrator") has undertaken, in pursuance of contract no. <Insert Contract No.> dated. <Date> to provide Implementation services for <<name of the assignment>> to [*Authority*] (hereinafter called "the Authority")

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

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

<Address of Registered Office> and having one of its 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 supplier, 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 System Integrator 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.

Date _____

Place _____ Signature _____

Witness _____ Printed name _____

(Bank's common seal)

10. Annexure 7(b) – Bank Guarantee for Earnest Money Deposit

To,

<Name>
<Designation>
<Address>
<Phone Nos.>
<Fax Nos.>
<Email id>

Whereas <<Name of the bidder>> (hereinafter called 'the Master System Integrator') has submitted the bid for Submission of RFP <<RFP Number>> dated <<Date>> for <<Name of the assignment>> (hereinafter called "the Bid") to <<Authority>>.

Know all Men by these presents that we <<... >> having our office at <<Address>> (hereinafter called "the Bank") are bound unto the << Authority >> (hereinafter called "the Authority") in the sum of Rs.

<<Amount in figures>> (Rupees <<Amount in words>> only) for which payment well and truly to be made to the said Authority, the Bank binds itself, its successors and assigns by these presents. Sealed with the Common Seal of the said Bank this <<Date>>.

The conditions of this obligation are:

1. If the Bidder having its bid withdrawn during the period of bid validity specified by the Bidder on the Bid Form; or
2. If the Bidder, having been notified of the acceptance of its bid by the Authority during the period of validity of bid
   (a) Withdraws his participation from the bid during the period of validity of bid document; or
   (b) Fails or refuses to participate in the subsequent Tender process after having been short listed;

We undertake to pay to the Authority up to the above amount upon receipt of its first written demand, without the Authority having to substantiate its demand, provided that in its demand the Authority will note that the amount claimed by it is due to it owing to the occurrence of one or both of the two conditions, specifying the occurred condition or conditions.

This guarantee will remain in force up to <<insert date>> and including <<extra time over and above mandated in the RFP>> from the last date of submission and any demand in respect thereof should reach the Bank not later than the above date.

NOTHWITHSTANDING ANYTHING CONTAINED HEREIN:

I. Our liability under this Bank Guarantee shall not exceed Rs. <<Amount in figures>> (Rupees <<Amount in words>> only)

II. This Bank Guarantee shall be valid up to <<*insert 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 date>>) failing which our liability under the guarantee will automatically cease.

(Authorized Signatory of the Bank)

Seal:

Date:

11. Annexure 8 – Non-Disclosure Agreement

WHEREAS, we the undersigned Bidder, _____, having our principal place of business or registered office at _____, are desirous of bidding for RFP No. <<>> dated <<DD-MM-2015>> "**Request for Proposal for Selection of {Name of the Project}**" (hereinafter called the said 'RFP') to the "[*Authority*]", hereinafter referred to as 'Authority'

And,

WHEREAS, the Bidder is aware and confirms that the Authority's business or operations, information, application or software, hardware, business data, architecture schematics, designs, storage media and other information or documents made available by the Authority in the RFP documents during the bidding process and thereafter, or otherwise (confidential information for short) is privileged and strictly confidential and or proprietary to the Authority,

NOW THEREFORE, in consideration of disclosure of confidential information, and in order to ensure the Authority's grant to the Bidder of specific access to Authority's confidential information, property, information systems, network, databases and other data, the Bidder agrees to all of the following conditions.

It is hereby agreed as under:

1. The confidential information to be disclosed by the Authority under this Agreement ("Confidential Information") shall include without limitation, any and all information in written, representational, electronic, verbal or other form relating directly or indirectly to processes, methodologies, algorithms, risk matrices, thresholds, parameters, reports, deliverables, work products, specifications, architecture, project information, security or zoning strategies & policies, related computer programs, systems, trend analysis, risk plans, strategies and information communicated or obtained through meetings, documents, correspondence or inspection of tangible items, facilities or inspection at any site to which access is permitted by the Authority.
2. Confidential Information does not include information which:
    a. the Bidder knew or had in its possession, prior to disclosure, without limitation on its confidentiality;
    b. information in the public domain as a matter of law;
    c. is obtained by the Bidder from a third party without any obligation of confidentiality;
    d. the Bidder is required to disclose by order of a competent court or regulatory authority;
    e. Is released from confidentiality with the written consent of the Authority.

The Bidder shall have the burden of proving hereinabove are applicable to the information in the possession of the Bidder.

3. The Bidder agrees to hold in trust any Confidential Information received by the Bidder, as part of the Tendering process or otherwise, and the Bidder shall maintain strict confidentiality in respect of such Confidential Information, and in no event a degree of confidentiality less than the Bidder uses to protect its own confidential and proprietary information. The Bidder also agrees:
    a. to maintain and use the Confidential Information only for the purposes of bidding for this RFP and thereafter only as expressly permitted herein;
    b. to only make copies as specifically authorized by the prior written consent of the Authority and with the same confidential or proprietary notices as may be printed or displayed on the original;
    c. to restrict access and disclosure of Confidential Information to their employees, agents, consortium members and representatives strictly on a "need to know" basis, to maintain confidentiality of the Confidential Information disclosed to them in accordance with this clause; and
    d. To treat Confidential Information as confidential unless and until Authority expressly notifies the Bidder of release of its obligations in relation to the said Confidential Information.

4. Notwithstanding the foregoing, the Bidder acknowledges that the nature of activities to be performed as part of the Tendering process or thereafter may require the Bidder's personnel to be present on premises of the Authority or may require the Bidder's personnel to have access to software, hardware, computer networks, databases, documents and storage media of the Authority while on or off premises of the Authority. It is understood that it would be impractical for the Authority to monitor all information made available to the Bidder's personnel under such circumstances and to provide notice to the Bidder of the confidentiality of all such information.

   Therefore, the Bidder shall disclose or allow access to the Confidential Information only to those personnel of the Bidder who need to know it for the proper performance of their duties in relation to this project, and then only to the extent reasonably necessary. The Bidder will take appropriate steps to ensure that all personnel to whom access to the Confidential Information is given are aware of the Bidder's confidentiality obligation. Further, the Bidder shall procure that all personnel of the Bidder are bound by confidentiality obligation in relation to all proprietary and Confidential Information received by them which is no less onerous than the confidentiality obligation under this agreement.

5. The Bidder shall establish and maintain appropriate security measures to provide for the safe custody of the Confidential Information and to prevent unauthorized access to it.

6. The Bidder agrees that upon termination or expiry of this Agreement or at any time during its currency, at the request of the Authority, the Bidder shall promptly deliver to the Authority the Confidential Information and copies thereof in its possession or under its direct or indirect control, and shall destroy all memoranda, notes and other writings prepared by the Bidder or its Affiliates or directors, officers, employees or advisors based on the Confidential Information and promptly certify such destruction.

7. Confidential Information shall at all times remain the sole and exclusive property of the Authority. Upon completion of the Tendering process and or termination of the contract or at any time during its currency, at the request of the Authority, the Bidder shall promptly deliver to the Authority the Confidential Information and copies thereof in its possession or under its direct or indirect control, and shall destroy all memoranda, notes and other writings prepared by the Bidder or its Affiliates or directors, officers, employees or advisors based on the Confidential Information within a period of sixty days from the date of receipt of notice, or destroyed, if incapable of return. The destruction shall be witnessed and so recorded, in writing, by an authorized representative of the Authority. Without prejudice to the above the Bidder shall promptly certify to the Authority, due and complete destruction and return. Nothing contained herein shall in any manner impair rights of the Authority in respect of the Confidential Information.

8. In the event that the Bidder hereto becomes legally compelled to disclose any Confidential Information, the Bidder shall give sufficient notice and render best effort assistance to the Authority to enable the Authority to prevent or minimize to the extent possible, such disclosure. Bidder shall not disclose to a third party any Confidential Information or the contents of this RFP without the prior written consent of the Authority. The obligations of this Clause shall be satisfied by handling Confidential Information with the same degree of care, which the Bidder applies to its own similar Confidential Information but in no event less than reasonable care.

For and on behalf of:
(BIDDER)

Authorized Signatory
Office Seal: Name:
Place:
Designation:
Date:

12. Annexure 9 - Consortium MoU Format

DRAFT MEMORANDUM OF UNDERSTANDING EXECUTED BY MEMBERS OF THE CONSORTIUM

[On Non-judicial stamp paper of INR 100 duly attested by notary public]

This Memorandum of Understanding (MoU) entered into this day of [*Date*] [*Month*] 2018 at [*Place*] among____(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 having office at [*Address*], as Party of the Third Part.

The parties are individually referred to as Party and collectively as Parties.

WHEREAS DIT, Govt. of *[State]* has issued a Request for Proposal dated [*Date*] (RFP) from the Applicants interested in **Request for Proposal for {Name of the Project}.**

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

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

The purpose of this Agreement is to define the principles of collaboration among the Parties to:

- Submit a response jointly to Bid for the "**Request for Proposal for {Name of the Project}"** as aConsortium.
- Sign Contract in case of award.
- Provide and perform the supplies and services which would be ordered by the Authority pursuant to the Contract.

This Agreement shall not be construed as establishing or giving effect to any legal entity such as, but not limited to, a company, a partnership, etc. It shall relate solely towards the Authority for "**Request for Proposal for {Name of the Project}"** for and related execution works to be performed pursuant to the Contract and shall not extend to any other activities.
The Parties shall be jointly and severally responsible and bound towards the Authority for the performance of the works in accordance with the terms and conditions of the BID document, and Contract.

---------- (Name of Party) shall act as Lead Partner of the Consortium. As such, it shall act as the coordinator of the Party's combined activities and shall carry out the following functions:
To ensure the technical, commercial and administrative co-ordination of the work package To lead the contract negotiations of the work package with the Authority.
The Lead partner is authorized to receive instructions and incur liabilities for and on behalf of all Parties.
In case of an award, act as channel of communication between the Authority and the Parties to execute the Contract

That the Parties shall carry out all responsibilities as Developer in terms of the Project Agreement.

That the broad roles and the responsibilities of each Party at each stage of the Bidding shall be as below: Party A: _____
Party B: _____

Party C: _____

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

That this MoU shall be governed in accordance with the laws of India and courts in *[State]* 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 MoU 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:

_____ ____

_____ ____

13. Annexure 10 - Format for Power of Attorney to Authorize Signatory

POWER OF ATTORNEY

[To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant Stamp Act. The stamp paper to be in the name of the company who is issuing the power of attorney.]

We, M/s._____(name of the firm or company with address of the registered office) hereby constitute, appoint and authorize Mr. or Ms._____(Name and residential address) who is presently employed with us and holding the position of_____, as our Attorney to do in our name and our behalf all or any of the acts, deeds or things necessary or incidental to our RFP for the Project (name of the Project), including signing and submission of the RFP response, participating in the meetings, responding to queries, submission of information or documents and generally to represent us in all the dealings with Client or any other Government Agency or any person, in connection with the works until culmination of the process of bidding till the Project Agreement is entered into with_____ _____(Client) and thereafter till the expiry of the Project Agreement.

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.

(Add in the case of a Consortium)

Our firm is a Member or Lead bidder of the Consortium of_____,_____and_ _____.

Dated this the_____day of_____2018

(Signature and Name of authorized signatory)

_____

(Signature and Name in block letters of all the remaining partners of the firm Signatory for the Company)

Seal of firm Company

Witness 1: Witness 2:

Notes:

To be executed by all the members individually.

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.

14. Annexure 11 - Format for Power of Attorney for Lead bidder of Consortium

[To be executed on non-judicial stamp paper of the appropriate value in accordance with relevant Stamp Act. The stamp paper to be in the name of the company who is issuing the power of attorney]

Whereas_____has invited RFP response for_____(Name of the Project)

Whereas, the Members of the Consortium comprising of M/s.____, M/s. _____and M/s.___(the respective names and addresses of the registered offices to be given) are interested in bidding for the Project and implementing the same in accordance with the terms and conditions contained in the RFP Documents.
Whereas, it is necessary for the members of the Consortium to designate one of them as the lead member with all necessary power and authority to do, for and on behalf of the Consortium, all acts, deeds and things as may be necessary in connection with the Consortium's RFP response for the Project.

NOW THIS POWER OF ATTORNEY WITNESSETH THAT

We, M/s._____and M/s._____hereby designate M/s. _____

being the member of the Consortium, as the lead member of the Consortium, to do on behalf of the Consortium, all or any of the acts, deeds or things necessary or incidental to the Consortium's RFP response for the Project, including submission of the RFP response, participating in meetings, responding to queries, submission of information or documents and generally to represent the Consortium in all its dealings with Client or any other Government Agency or any person, in connection with the Project until culmination of the process of bidding till the Project Agreement is entered into with Client and thereafter till the expiry of the Project Agreement.
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 or Consortium.
Dated this the_____day of_____2018

_____

(Signature)

_____

(Name in Block Letter of Executant) *[Seal of Company]*

Witness 1 Witness 2 Witness 3

Notes:

To be executed by all the members individually, in case of a Consortium.

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.

15. Annexure 12: Format of Agreement between Bidder and their parent company / subsidiary / Sister Concern Company (As the case may be)

(TO BE EXECUTED ON STAMP PAPER OF REQUISITE VALUE AND NOTORISED)

This agreement made this ___ day of _____ month _____ year by and between M/s. _____ (Fill in the Bidder's full name, constitution and registered office address) hereinafter referred to as bidder on the first part and M/s. _____ (Fill in full name, constitution and registered office address of Parent Company/Subsidiary / Sister Concern Company, as the case may be) hereinafter referred to as "Parent Company/ Subsidiary Company/ Sister Concern Company (Delete whichever not applicable)" of the other part:

WHEREAS

Hubballi – Dharwad Smart City Limited (hereinafter referred to as HDSCL) has invited offers vide their RFP No. _____ for _____ and M/s. _____(Bidder) intends to bid against the said RFP and desires to have technical support of M/s. _____[Parent Company/ Subsidiary Company/ Sister Concern Company-(Delete whichever not applicable)] and whereas Parent Company/ Subsidiary Company/ Sister Concern Company (Delete whichever not applicable) represents that they have gone through and understood the requirements of subject tender and are capable and committed to provide the services as required by the bidder for successful execution of the contract, if awarded to the bidder.

Now, it is hereby agreed to by and between the parties as follows:

1. M/s._____(Bidder) will submit an offer to HDSCL for the full scope of work as envisaged in the RFP document as a main bidder and liaise with HDSCL directly for any clarifications etc. in this context.

2. M/s. _____ (Parent Company/ Subsidiary Company/ Sister Concern Company (Delete whichever not applicable) undertakes to provide technical support and expertise, expert manpower and procurement assistance and project management to support the bidder to discharge its obligations as per the Scope of work of the tender / Contract for which offer has been made by the Parent Company/Subsidiary Company/Sister Concern Company (Delete whichever not applicable) and accepted by the bidder.

3. This agreement will remain valid till validity of bidder's offer to HDSCL including extension if any and till satisfactory performance of the contract in the event the contract is awarded by HDSCL to the bidder.

4. It is further agreed that for the performance of work during contract period bidder and Parent Company/Subsidiary Company/Sister Concern Company (Delete whichever not applicable) shall be jointly and severely responsible to HDSCL for satisfactory execution of the contract.

5. However, the bidder shall have the overall responsibility of satisfactory execution of the contract awarded by HDSCL.

In witness whereof the parties hereto have executed this agreement on the date mentioned above.

For and on behalf of _____ (Bidder)	For and on behalf of _____ (Parent/subsidiary/sister concern company)

Signature: Name: Designation: **Witness 1:** Signature: Full name: Address: **Witness 2:** Signature: Full name: Address:	Signature: Name: Designation: **Witness 1:** Signature: Full name: Address: **Witness 2:** Signature: Full name: Address:

16. Annexure 13: Format of Parent company / Subsidiary / Sister Concern Company Guarantee

(As the case may be)

(TO BE EXECUTED ON STAMP PAPER OF REQUISITE VALUE AND NOTORISED)

DEED OF GUARANTEE

THIS DEED OF GUARANTEE executed at ..... this ..... day of ..... by M/s ..... (mention complete name) a company duly organized and existing under the laws of ..... (insert jurisdiction/country), having its Registered Office at ..... hereinafter called "the Guarantor" which expression shall, unless excluded by or repugnant to the subject or context thereof, be deemed to include its successors and permitted assigns.

WHEREAS

Hubballi – Dharwad Smart City Limited, a statutory body under _____ , having its Registered Office at _____, hereinafter called "HDSCL" which expression shall unless excluded by or repugnant to the context thereof, be deemed to include its successor and assigns, invited tender number ..... for ..... on .....

M/s ..... (mention complete name), a company duly organized and existing under the laws of ..... (insert jurisdiction/country), having its Registered Office at ..... (give complete address) hereinafter called "the Company" which expression shall, unless excluded by or repugnant to the subject or context thereof, be deemed to include its successor and permitted assigns, have, in response to the above mentioned tender invited by HDSCL, submitted their bid number ..... to HDSCL with one of the condition that the Company shall arrange a guarantee from its parent company guaranteeing due and satisfactory performance of the work covered under the said tender including any change therein as may be deemed appropriate by HDSCL at any stage.

The Guarantor represents that they have gone through and understood the requirement of the above said tender and are capable of and committed to provide technical and such other supports as may be required by the Company for successful execution of the same.

The Company and the Guarantor have entered into an agreement dated ..... as per which the Guarantor shall be providing technical and such other supports as may be necessary for performance of the work relating to the said tender.

Accordingly, at the request of the Company and in consideration of and as a requirement for HDSCL to enter into agreement(s) with the Company, the Guarantor hereby agrees to give this guarantee and undertakes as follows:

1. The Guarantor (Parent Company / 100% Subsidiary Company/ Sister Concern (Delete whichever not applicable) unconditionally agrees that in case of non-performance by the Company of any of its obligations in any respect, the Guarantor shall, immediately on receipt of notice of demand by HDSCL, take up the job without any demur or objection, in continuation and without loss of time and without any cost to HDSCL and duly perform the obligations of the Company to the satisfaction of HDSCL.
2. The Guarantor agrees that the Guarantee herein contained shall remain valid and enforceable till the satisfactory execution and completion of the work (including discharge of the warranty obligations) awarded to the Company.
3. The Guarantor shall be jointly with the Company and also severally responsible for satisfactory performance of the contract entered between the Company and HDSCL.

4. The liability of the Guarantor, under the Guarantee, is limited to the 50% of the annualized contract price entered between the Company and HDSCL. This will, however, be in addition to the forfeiture of the Performance Bank Guarantee furnished by the Company.
5. The Guarantor represents that this Guarantee has been issued after due observance of the appropriate laws in force in India. The Guarantor hereby undertakes that the Guarantor shall obtain and maintain in full force and effect all the governmental and other approvals and consents that are necessary and do all other acts and things necessary or desirable in connection therewith or for the due performance of the Guarantor's obligations hereunder.
6. The Guarantor also agrees that this Guarantee shall be governed and construed in accordance with the laws in force in India and subject to the exclusive jurisdiction of the courts of Hubballi - Dharwad, Karnataka.
7. The Guarantor hereby declares and represents that this Guarantee has been given without any undue influence or coercion, and that the Guarantor has fully understood the implications of the same.
8. The Guarantor hereby agrees 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 HDSCL and the Bidder Company shall in any way release Guarantor from any liability under this guarantee and Guarantor hereby waive notice of any such change, addition or modification.
9. The Guarantor represents and confirms that the Guarantor has the legal capacity, power and authority to issue this Guarantee and that giving of this Guarantee and the performance and observations of the obligations hereunder do not contravene any existing laws.

For and on behalf of _____ (name of the Parent Company/Subsidiary/Sister Concern company)

Signature: _____

Name: _____

Designation: _____

Common seal of the guarantor company:

Witness 1:

Signature: _____

Full Name: _____

Address: _____

Witness 2:

Signature: _____

Full Name: _____

Address: _____

INSTRUCTIONS FOR FURNISHING PARENT/SUBSIDIARY/SISTER CONCERN COMPANY GUARANTEE

1. Guarantee should be executed on stamp paper of requisite value and notarised.
2. The official(s) executing the guarantee should affix full signature (s) on each page.

3. Resolution passed by Board of Directors of the guarantor company authorizing the signatory (ies) to execute the guarantee, duly certified by the Company Secretary should be furnished along with the Guarantee.
4. Following certificate issued by Company Secretary of the guarantor company should also be enclosed along with the Guarantee.

"Obligation contained in the deed of guarantee No._____ furnished against tender No. _____ are enforceable against the guarantor company and the same do not, in any way, contravene any law of the country of which the guarantor company is the subject"

RFP FOR SELECTION OF LOCAL SYSTEM INTEGRATOR FOR IMPLEMENTATION OF INTEGRATED COMMAND AND CONTROL CENTRE AND SMART ELEMENTS IN HUBBALLI-DHARWAD

Volume 2: Scope of Work

Dated: March 2018

RFP No. UDD/2017-18/IND45

HUBBALLI DHARWAD SMART CITY LIMITED

Contents

1. Introduction

1.1 Bidding Data Sheet

Particulars	Details
Name of Purchaser	Hubballi- Dharwad Smart City Limited (HDSCL)
Name of the Engagement	Selection of System Integrator for implementation of ICT solutions and establishment of Integrated Command and Control Center (ICCC) for Hubballi - Dharwad Smart City
Release Date of RFP by BSCDCL	14.03.2018
Last date & time for submission of Pre-Bid Queries	06.04.2018 by 11:00 hrs
Pre-Bid Meeting	13.04.2018 at the meeting hall of Hubballi Dharwad Municipal Corporation. Hubballi - 580020
Last date (deadline) for submission of the bid (e-Procurement portal)	28.04.2018 at 16:00 hrs
Opening of Technical Bids	01.05.2018 at 11:00 hrs
Presentation by Bidders	Will be intimated to successful bidders later
Opening of Commercial Bids	Will be intimated to successful bidders later
Validity of Proposal	Proposals must remain valid 180 days after the Submission date.
Method of Selection	The Selection of LSI shall be through two stage Least Cost System (LCS) with the 1st Stage consisting of prequalification and technical Criteria. The minimum qualifying mark for 1st stage would be 80. 2nd stage would be evaluation of financial criteria and the bidder with L1 bid will be selected

Particulars	Details
Address of Communication	To, The Managing Director Hubballi - Dharwad Smart City Office Hubballi - Dharwad
Bidding in Consortium	Consortium of up to 3 members including Lead Bidder is allowed (Lead Bidder and 2 Consortium Partner) The lead bidder shall be jointly & severally responsible for complete scope, whereas partner/s shall be severally responsible only for its/their respective scope. The bid should contain details of all the members of the consortium including their legal status and specify their roles and responsibilities in the project. The members of the consortium shall enter into an Agreement for the purpose of submitting the proposal and the same shall be submitted with the proposal, failing which bid will be summarily rejected.
Sub-Contracting	• Limited sub-contracting is allowed for outdoor activities such as fibre laying, camera installation, network provisioning, mechanical and civil work as required in the project. • Bidder needs to mention details of any sub-contracting proposed in the bid along with name of sub-contractor and activity assigned. Any change in sub-contractor at later date will be allowed only after approval of HDSCL.
Tender Fees	As indicated in the e-procurement portal (INR Rs. 7,500)
Earnest Money Deposit / Bid Security	INR 39.57 Lakhs (INR 39,57,000/-) To be submitted as per clause 2.8 of RFP Vol I.

Note

1. HDSCL reserves the right to change any schedule of bidding process.

1.2 Project Objectives

One of the primary objectives of Hubballi-Dharwad Smart City Limited (HDSCL) under its Smart City Mission is to drive citizen centricity through improvements in City Operations, improve efficiency of municipal services and promote a better quality of life for residents. In order to achieve these objectives, Hubballi-Dharwad Smart City Limited desires to foster the development of a robust ICT infrastructure that supports digital applications and ensures seamless oversight of city-wide operations through Integrated Command and Control Centre, improved Solid waste Management, Surveillance, Smart Parking, Emergency response mechanisms and real time tracking of services and vital city metrics throughout the city and in government departments.

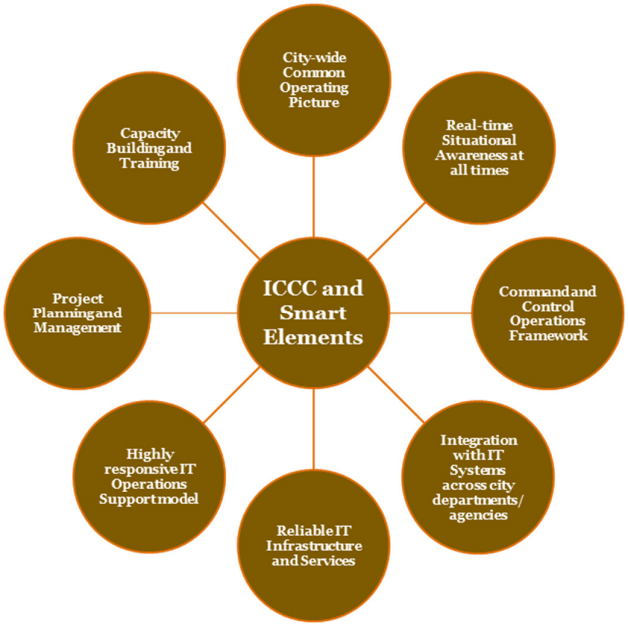


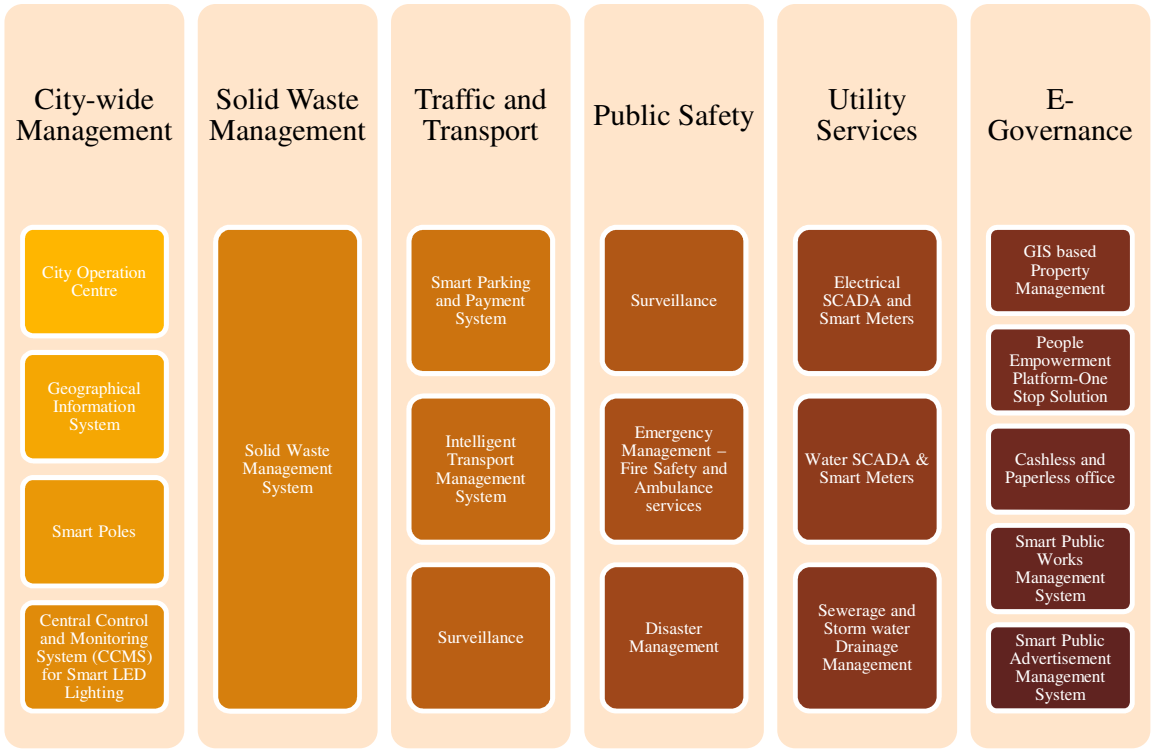
Figure -1 ICCC and its Components

The key objective of this project is to establish a collaborative framework where input from different functional departments of Hubballi-Dharwad Municipal Corporation and other stakeholders such as transport, water, fire, police, e-governance, etc. can be assimilated and analyzed on a single platform; consequently resulting in aggregated city level information. Further, this can be converted to actionable intelligence, which would be propagated to relevant stakeholders and citizens. Following are the key intangibles that should be addressed by the proposed interventions:

HDSCL is considering the appointment of an agency to set up these priority initiatives identified under the Smart City mission which will include city operation center (COC) and Smart Elements like Solid Waste Management System, City Wi-Fi, Smart Parking, Smart Poles, and City Surveillance.

Main objective of the project is to break silos in the city with in the departments and across the departments. Also to install appropriate check points for solutions implemented, so that the services delivered to the public are to the at most satisfaction of public.

Following city-wide domains will be covered under the scope of this project through ICT interventions.



While a few of these will be implemented throughout the scope of this RFP the others will be integrated with the State level centralized Integrated Command and Control Centre to generate the Common Operating Picture. This will be detailed in the following sections.

2.0 Project Scope of Work

There are two parts of establishment of ICCC:

Centralized City operation platform:

Centralized city operation platform along with Data Center, Disaster recovery (DC/DR) and IoT Platform will be provided by the KUIDFC through vendor/ MSI appointed through open tender process. The city operation platform, compute and storage required for all the smart cities in Karnataka will be provided by this MSI or State Vendor.

Physical City ICCC:

Each smart city has to implement, integrate and operationalize all the smart solutions/ components of the city. These smart ICT solutions like Smart Parking, Smart Solid Waste Management etc. have to be implemented by City vendor(s) to be appointed by each city SPV through open tender process. Establishing the physical build of City command center with Video wall, local video storage, networking components etc. will they be responsibility of city vendor.

These solutions will be integrated with City operation platform with an integrated operations and dashboard application. This application/city operation platform will be provided by the vendor selected by KUIDFC.

The MSI / State Vendor will be required to integrate already implemented video surveillance services in the city by police department and services which are proposed to be implemented under this project.

HDSCL intends to select a Local System Integrator (SI) for city of Hubballi-Dharwad by following competitive bidding process to design, develop, implement and maintain the Smart City System for a period of five years including Go Live and O&M phase on turnkey basis. This document contains the following details:

- Scope of work that will be assigned to the LSI as part of this project
- Other terms and conditions of the envisaged Smart City System

LSI willestablish city operation center as Integrated Smart City System for Hubballi-Dharwad comprising of various project modules/components packaged under 3 levels of intervention:

2.1 Level 1: Integrate and View

Certain components will be integrated using direct feeds, dashboards and sharing of alerts/ actionable inputs for integrate and view operations, such as:

1. City Surveillance System (Police and Traffic)
2. Smart Governance
3. People Empowerment Platform
4. Emergency and Disaster Management
5. Intelligent Transport Management System
6. Smart Energy
7. Smart Water

2.2 Level 2: Integrate Command and Control

1. Smart Parking & Payment System
2. Smart Poles
3. CCMS for LED Street Lights
4. GIS Based Property Management System

2.3 Level 3: Implement, Command, Control and Fully Operate

1. City Operation Center (COC) or City ICCC
2. Smart IT Solid Waste Management
3. Geographical Information System (GIS)

Following table describes all the solutions to be integrated phase wise and layer wise:

SL No.	Projects	Implementation	Integration	Phase
1	City Operation Centre (COC) or City ICCC	YES	YES	Phase- I and II
2	Smart IT Solid Waste Management	YES	YES	Phase- I
3	Geographical Information System (GIS)	YES	YES	Phase- I and II
4	Electrical SCADA	NO	YES	Phase- II
5	Surveillance System – Police and Traffic	NO	YES	Phase- I
6	Intelligent Transport Management System	NO	YES	Phase- I
7	SMART Parking & Payment System	NO	YES	Phase- II
8	Smart Poles	NO	YES	Phase- I

9	CCMS for LED Street Lights	NO	YES	Phase-II
10	GIS based Property Management	NO	YES	Phase- II
11	Smart Governance	NO	YES	Phase- II
12	People Empowerment Platform	NO	YES	Phase- I and II
13	Water SCADA	NO	YES	Phase- II
14	Emergency and Disaster Management	YES	YES	Phase- II
15	Any other sensors/systems	NO	YES	Phase-II

MSI and LSI shall be responsible to carry out the detailed survey prior to submission of bid for the complete solution component requirement in order to finalize infrastructure requirement, network bandwidth requirement, operational & administrative challenges etc.

The subsequent sections detail out the solution and scope with respect to each of the solution component. LSI shall note that the activities defined within scope of work mentioned are indicative and may not be exhaustive. LSI is expected to perform independent analysis of any additional work that may be required to be carried out to fulfil the requirements as mentioned in this RFP and factor the same in its response.

The scope of the project for LSI includes implementation of identified smart ICT solutions including establishment of city based city operation center integrated with state level centralized ICCC and integrate the already implemented ICT solutions with ICCC. Scope also includes conducting a detailed assessment of current state of city services being provided and accordingly plan, design a comprehensive technical architecture of city operation center (COC) and integrate it with ICCC so that relevant current and future ICT project may be integrated with ICCC.

As part of scope the LSI is expected to integrate various other ICT initiatives of the city with ICCC. These ICT initiatives may be from other departments' services like Water, Electricity, Police, and Transport etc.

The LSI shall have the overall responsibility to design, build, implement, operate, and maintain the project for a period of five years including Go-Live and O&M.

Specifically, Following are the main activities to be carried out by LSI:

- Project Planning, execution and Management
- Assessment and Gap analysis of requirement for all smart city components under scope.
- Solution Design, System Customization and development for all components mentioned in this volume.
- ICT items Procurement, deployment and commissioning

- Site Preparation including LAN Networking
- Application and general awareness Training
- Business Process Reengineering for the selected applications/ services, if required
- STQC Certification
- UAT & Go live
- Capacity Building
- Technical Support
- Operation & Maintenance (O&M) after Go-Live (Total 5 Years)

2.4 Finalization of the detailed Technical Architecture for smart city network

LSI will be required to review the Technical Architecture suggested in the Tender and finalize the detailed architecture for the overall system, incorporating findings of site survey exercise. All the components of the Technical Architecture should:

- At least comply with the published e Governance standards, frameworks, policies and guidelines available on http://egovstandards.gov.in (updated from time-to-time); and
- Be of leading industry standards and /or as per standards mentioned in Volume - III

2.5 Finalization and submission of a detailed technical architecture

LSI shall submit the detailed Technical Architecture and description of each sub-components, along with the bid, which should take into consideration following guiding principles:

- **Scalability** - Important technical components of the architecture must support scalability to provide continuous growth to meet the growing demand of the city (s). The system should also support vertical and horizontal scalability so that depending on changing requirements from time to time, the system may be scaled upwards. There must not be any system imposed restrictions on the upward scalability in number of field devices, or other smart city components. Main technology components requiring scalability are storage, bandwidth and computing performance (IT Infrastructure).

  The architecture should be scalable (cater to increasing load of internal and external users and their transactions) and capable of delivering high performance till the system is operational.

  The Applications proposed for various vertical solutions shall be capable of handling 200% growth for the next 5 years. LSI shall clearly quantify the expansion capabilities of the application software without incurring additional cost.

- **Availability -** The architecture components should be redundant and ensure that there is no single point of failures in the key solution components. Considering the high sensitivity of the system, design should be in such a way as to be resilient to technology sabotage. To take care of remote failure, the systems need to be configured to mask and recover with minimum outage. The LSI shall make the provision for high availability for all the services of the system. Redundancy has to be considered at the core components level. The SLA for various solutions is explained in section 9.0**.**
- **Security**- The architecture must adopt an end-to-end security model that protects data and the infrastructure from malicious attacks, theft, natural disasters etc. LSI must make provisions for security of field equipment as well as protection of the software system from hackers and other threats. Attacks and theft should be controlled and well supported (and implemented) with the security policy. The virus and worm attacks should be well defended with gateway level Anti-virus system, along with workstation level Anti-virus mechanism. There should also be an endeavor to make use of the SSL/VPN technologies to have secured communication between Applications and its end users. Furthermore, all the system logs should be properly stored & archived for future analysis and forensics whenever desired. The authority would carry out the security audit of the entire system upon handover and at regular interval during O&M period.

  Field equipment installed through this Project would become an important public asset. During the contract period of the Project the LSI shall be required to repair / replace any equipment if stolen / damaged/faulty. Appropriate insurance cover must be provided to all the equipment supplied under this project.

  The systems implemented for project should be highly secure, considering that it is intended to handle sensitive data relating to the city and residents of the city. The overarching security considerations are described below:

  - The security services used to protect the solution shall include: Identification, Authentication, Access Control, Administration and Audit and support for industry standard protocols.
  - The solution shall support advanced user authentication mechanisms including digital certificates and biometric authentication.
  - Security design should provide for a well-designed identity management system, security of physical and digital assets, data and network security, backup and recovery and disaster recovery system.

- The solution should provide for maintaining an audit trail of all the transactions and should also ensure the non-repudiation of audit trail without impacting the overall performance of the system.
- The overarching requirement is the need to comply with ISO 27001 standards of security.
- The application design and development should comply with OWASP top 10 principles
- All the field devices will be X.509 certified for compliance to policy change management and to ensure that there is no default password.

- **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. Network should be auto/manual configurable for various future requirements for the ease of maintenance / debugging.
- **Interoperability** - The system should have capability to take feed from cameras installed by private / Govt. at public places, digitize (if required) & compress (if required) this feed & store as per requirements.
- **Open Standards** - Systems should use open standards and protocols to the extent possible
- **Single Sign On**- The application should 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 services in the same session. For employees of the department concerned, the browser based application accessed on the intranet, through single-sign-on mechanism, will provide access to all the services of the departments concerned (based on their roles and responsibilities), Help module, basic and advanced reporting etc. Similarly, for external users (citizens, etc), based on their profile and registration, the system shall enable single-sign on facility to apply for various services, make payments, submit queries /complaints and check.
- **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 Certifying Authorities (CA). In particular, 3 factor authentications (login id & password, biometric and digital signature) shall be implemented by the SI for officials/employees involved in processing citizen services.
- **Interoperability Standards**- Keeping in view the evolving needs of interoperability, especially the possibility that the solution shall become the focal point of delivery of services, and may also involve cross-functionality with the e-Government projects of other

departments / businesses in future, the solution should be built on Open Standards. The LSI shall ensure that the application developed is easily integrated with the existing applications. The code does not build a dependency on any proprietary software, particularly, through the use of proprietary 'stored procedures' belonging to a specific database product. The standards should:

- At least comply with the published e-Governance standards, frameworks, policies and guidelines available on http://egovstandards.gov.in (updated from time-to-time); and
- Be of leading industry standards and /or as per standards mentioned in Volume III.

All the key personnel working on the Project should be on direct payroll of the SI/OEM/Consortium partner. If the work is sub-contracted, the sole responsibility of the work shall lie with the LSI. The LSI shall be held responsible for any delay/error/non-compliance/penalties etc. of its subcontracted vendor. The details of the sub-contracting agreements (if any) between both the parties would be required to be submitted to city and approved by the Authority before resource mobilization.

- **GIS Integration**- LSI shall undertake detail assessment for integration of all the Field level ICT interventions proposed with the existing Geographical Information System (GIS) using ArcGIS Platform. LSI is required to carry out the seamless integration to ensure ease of use of GIS in the Dashboards in Command Control Centers. If this requires field survey, it needs to be done by LSI. If such a data is already available with city, it shall facilitate to provide the same.

  LSI is to check the availability of such data and it's suitability for the project.SI is required to update GIS maps from time to time.

- **SMS Gateway Integration**- LSI shall carry out SMS Integration of the SMS services procured by MSI. LSI should develop necessary applications to send mass SMS to groups/individuals.

- **Application Architecture**

1. The applications designed and developed for the departments concerned must follow best practice and industry standards. In order to achieve the high level of stability and robustness of the application, the system development life cycle must be carried out using the industry standard best practices and adopting the security constraints for access and control rights. The various modules / application should have a common Exception Manager to handle any kind of exception arising due to internal/ external factors. Standards should (a) at least comply with published e-Governance standards, frameworks, policies and guidelines available on http://egovstandards.gov.in (updated from time-to-

time); and (b) be of leading industry standards and /or as per standards mentioned in Volume III.

2. The modules of the application are to be supported by the Session and Transaction Manager for the completeness of the request and response of the client request. The system should have a module exclusively to record the activities/ create the log of activities happening within the system / application to avoid any kind of irregularities within the system by any User / Application.
3. LSI shall design and develop the Smart City System as per the Functional and System requirement specifications finalized.

The Modules specified will be developed afresh based on approved requirement.

2.6 Roles & Responsibilities of MSI & LSI

Master System Integrator (MSI): The MSI is the bidder identified through a tender process for the set-up of centralized Data Centre at KMDS & Disaster Recovery (DR) on cloud and also provides the Integrated City Operations platform and GIS platform.

Local System Integrator (LSI): The LSI is the bidder identified through a tender process for the setup of Integrated Command and Control Centre (ICCC) at the city level and also for the implementation of city specific applications.

Third Party Application Service Provider (TPA – SP): The TPA-SP is the bidder identified through tender process for the implementation of other Smart City Projects whose application is hosted at the centralized Data Centre and is required to be integrated with the command and control centre

The indicative list pertaining to the roles & responsibilities of the LSI, MSI and any other third party service provider are as listed below. It is recommended that the LSI refer to the MSI RFP for further detailed understanding on the roles & responsibilities of the respective stakeholder

No.	Activity	MSI	LSI	TPA-SP
1.	Procurement, deployment and commissioning of IT Infrastructure (ex: Servers) at KMDS & DR	√		
2.	Procurement and installation of the OS & licensing for City-level application at KMDS & DR		√	√
3.	Estimating the requirement for storage and compute required at KMDS & the DR for City-level application		√	√
4.	Provisioning of rack space at KMDS & DR for the requirement of the city	√		

5.	Hosting the City-level application at the servers in KMDS (production) & DR		√	√
6.	Back-up to secondary storage devices at DC & DR	√		
7.	DR setup for ICOP	√		
8.	DR setup for City-level application	√		
9.	Integration (development, testing and staging) between City-level application and the ICCC application at KMDS	√	√	√
10.	Information/Data flow between DC & DR	√	√	
11.	Integration (development, testing and staging) between City-level application and the ICCC application at DR in case of DC failure	√	√	√
12.	Ensure the availability of IT Infrastructure at DC (KMDS)	√		
13.	Ensure the availability of ICOP Application	√		
14.	Ensure the availability of City-level Application		√	√
15.	Customization, development and functional testing of ICOP	√		
16.	User Acceptance testing of ICOP		√	
17.	Ensuring the availability of GIS platform	√		
18.	Updating the data layers (relevant to City-level project) at GIS		√	
19.	Network connectivity between field devices and KMDS		√	√
20.	Network connectivity between KMDS and ICCC facility	√		
21.	Network connectivity between KMDS and DR	√		
22.	Scheduling & communicating the planned down time at Data Centre	√		
23.	Coordination & assistance for planned down time for the respective applications at Data Centre	√	√	√
24.	Provision of DNS	√		
25.	Procure, Install, Commission and Operate the Centralized Helpdesk	√		
26.	Integration between external applications and City-level application		√	√
27	Ensure the availability of field devices		√	√

28	Network connectivity to the DR for video storage		√	
29	Define functional specifications for the data coming from the field devices to the IoT platform		√	√
30	Implementation of Business logic at the IoT platform for the data coming from field devices	√		
31	Ensure data flow from cameras/ field devices to the Video Storage		√	√
32	Integration (development, testing and staging) between field devices and the IoT platform at KMDS	√	√	√
33	Integration (development, testing and staging) between field devices and the IoT platform at DR in case of DC failure	√	√	√

2.7 Other expectations for Local System Integrator

1. LSI shall engage early in active consultations with the Authority, City Police and other key stakeholders to establish a clear and comprehensive project plan in line with the priorities of all project stakeholders and the project objectives.
2. LSI shall assess existing infrastructure's current ability to support the entire solution and integrate the same with the proposed solution wherever applicable and possible
3. LSI shall judiciously evaluate the resources and time planned for undertaking the current state assessment, given the overall timelines and milestones of the project.
4. LSI shall be responsible for supply of all the Products/equipment such as optical fibre cable (if required), Network, Hardware, Software, Devices, etc. as indicated (but not limited to) in the tentative Bill of Materials included in the RFP and their appropriate quantity & capacity.
5. LSI shall be responsible for supply of passive components indicated in the Bill of MaterialsSection of the RFP viz. Housings, Fibre Patch Cords, Racks etc.
6. Validate / Assess the re-use of the existing infrastructure if any with Authority site
7. Supply, Installation, and Commissioning of entire solution at all the locations.
8. LSI shall provide the bandwidth required for operationalizing each smart city initiative. TheBandwidth requirement shall be analyzed and procured by the LSI at its own cost / risk.
9. LSI shall Install and commission connectivity across all designated locations.
10. LSI shall ensure high availability, reliability and redundancy of the network elements to meet the Service Level requirements.
11. LSI shall be responsible for upgradation, enhancement and provisioning additional supplies of

network (including active / passive components), hardware, software, etc. as requisitioned by Authority.

12. LSI shall ensure that the infrastructure provided under the project shall not have an end oflife within 60 months from the date of bidding.
13. LSI shall ensure that the end of support is not reached during the concurrency of the contract and 5 years thereafter.
14. LSI shall ensure compliance to all mandatory government regulations as amended from time to time.
15. The LSI shall ensure that all the peripherals, accessories, sub-components required for the functionality and completeness of the solution, including but not limited to devices, equipment, accessories, patch cords (fibre), cables, software, licenses, tools, etc. are provided according to the requirements of the solution.
16. Authority shall not be responsible if the LSI has not provisioned some components, subcomponents, assemblies, sub-assemblies as part of Bill of Materials in the RFP. The LSI shall have to provision these & other similar things to meet the solution requirements at no additional cost and time implications to Authority.
17. All the software licenses that the LSI proposes shall be perpetual software licenses along with maintenance, upgrades and updates for the currency of the contract. The software licenses shall not be restricted based on location and Authority shall have the flexibility touse the software licenses for other requirements if required.
18. LSI shall ensure there is a 24x7 comprehensive onsite support for duration of the contractfor respective components to meet SLA requirement. The LSI shall ensure that all the OEMshave an understanding of the service levels required by Authority. LSI is required to providethe necessary MAF (Manufacturer Authorization Form) as per the format provided in theRFP in support of OEMs active support in the project.
19. Considering the criticality of the infrastructure, LSI is expected to design the solutionconsidering the RFP requirement of no single point of failure with high level ofredundancyand resilience to meet the network uptime requirements.
20. LSI shall be responsible for periodic updates & upgrades of all equipment, cabling and connectivity provided at all locations during the contract period.
21. LSI shall be responsible for setting up interiors of building with necessary physical infrastructure including provisioning for network, power, rack, etc. at all the locations.
22. LSI is expected to provide following services, including but not limited to:

I. Provisioning hardware and network components of the solution, in line with the proposed authority's requirements
II. Size and propose for network devices (like Router, switches, security equipment including firewalls, IPS / IDS, routers, etc. as per the location requirements with the required components/modules, considering redundancy and load balancing in line with RFP.
III. Size and provision the WAN bandwidth requirements across all locations considering the application performance, data transfer, and other requirements for smart city initiatives.
IV. Liaise with service providers for commissioning and maintenance of the links.
V. Furnish a schedule of delivery of all IT/Non-IT Infrastructure items.
VI. All equipment proposed as part of this RFP shall be rack mountable.
VII. Authority may at its sole discretion evaluate the hardware sizing documentproposed by the SI. The. SI needs to provide necessary explanation for sizing to the Authority.
VIII. Complete hardware sizing for the complete scope with provision for upgrade.
IX. Specifying the number and configuration of the racks (size, power, etc.) that shall be required at all the locations.
X. The LSI shall provide for all required features like support for multiple routingprotocols, congestion management mechanisms and Quality of Service support.
XI. The LSI shall ensure that all active equipment (components) are Simple NetworkManagement Protocol (SNMP) V3 compliant and are available for maintenance/management through SNMP from the date of installation by a NetworkMonitoring System.

23. LSI shall directly interact with electricity boards for provision of mains power supply at all desired locations for any Field Infrastructure solution. The Hubballi-Dharwad Smart City shall facilitate, if any documentation is required from its side. LSI shall be responsible for provisioning of requisite electricity power and its recurring charges (during operational phase). LSI may provision the same under appropriate heads in the commercial bid.
24. Prior to starting the site clearance, the LSI shall carry out survey of field locations as specified in this Volume, for buildings, structures, fences, trees, existing installations, etc. The Hubballi-Dharwad Smart City shall be fully informed of the results of the survey and the amount and extent of the demolition and site clearance shall then be agreed with the HDSCL.
25. Lightning Proof Measures
    I. The LSI shall comply with lightning-protection and anti –interference measures forsystem structure, equipment type selection, equipment earthing, power, signal cables laying.
    II. Corresponding lightning arrester shall be erected for the entrance cables of powerline, video line, data transmission cables. All crates shall have firm, durable shell. Shell shall have

dustproof, antifouling, waterproof functions; capable to bear certain mechanical external force.

III. Signal separation of low and high frequency; equipment protective field shall be connected with their own public equal power bodies; small size/equipment signal lightning arrester shall be erected before the earthling.

IV. The Internal Surge Protection Device for Data Line Protection shall be selected asperzone of protection described in IEC 62305, 61643-11/12/21, 60364-4/5. Data lineprotection shall be used for security system, server data path and other communication equipment.

V. Data line protection shall be installed as per zone defined in IEC 62305.

a. Type 1 device shall be installed between zone 0B and zone 1.

b. Type 2 devices shall be installed before the equipment in zone 2 and 3.

26. After signing of contract, the Systems Integrator needs to deploy the team proposed for the project and ensure that a Project Inception Report is submitted to Hubballi-Dharwad Smart City Limited which should cover following aspects:

I. Names of the Project Team members, their roles & responsibilities

II. AS-IS Assessment of the existing ICT Infrastructure at departments in-scope

III. Approach & methodology to be adopted to implement the Project (which should bein line with what has been proposed during bidding stage, but may have valueadditions / learning in the interest of the project).

IV. Responsibility matrix for all stakeholders

V. Risks the SI anticipates and the plans they have towards their mitigation.

VI. Detailed Project Plan, specifying dependencies between various project activities /sub-activities and their timelines.

27. Feasibility Report for all ICT projects mentioned in the RFP should be conducted. Local SystemIntegrator should provide as part of feasibility report the detailed To-Be designs (layout plans) specifying the following:

- High Level Design (including but not limited to):

a. Application architecture documents

b. ER diagrams and other data modelling documents

c. Logical and physical database design

d. Data dictionary and data definitions

e. Application component design including component deployment views, control flows, etc.

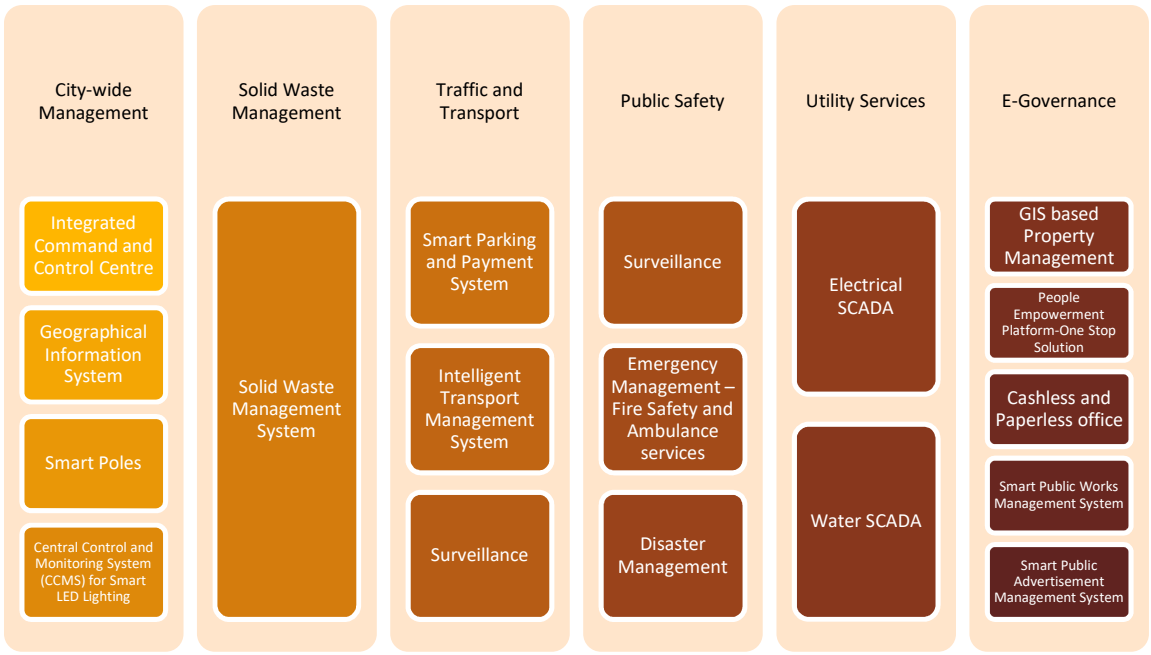
f. Field equipment deployment architecture

- Low Level Design (including but not limited to)
    a. Application flows and logic including pseudo code o GUI design (screen design, navigation, etc.)
    b. Database architecture, including defining data structure, data dictionary as per standards laid-down by Government of India/ Government of Karnataka
- Location of all field systems and components proposed at the junctions/other locations,
- Height and foundation of Poles, cantilevers, gantry and other mounting structures for other field devices
- Location of Junction Box
- Location of PoP
- Electrical power provisioning

28. Any functionality not expressly stated in this document but required to meet the needs of the organization to ensure successful operations of the system shall be carried out by the LSI via a mutually agreed change request.

2.7.1 Components and Service Overview

The Local System Integrator (LSI) should ensure the successful implementation of the proposed "City Operation Centre, Smart Elements in Hubballi-Dharwad city and integrate all these solution with centralized city operation platform / Integrated Command and Control Center", develop the Concept of Operations (CONOPS), provide capacity building support to city authorities and Operate and maintain the solution as per the scope of services described below. Any functionality not expressly stated in this document but required to meet the needs of the HDSCL to ensure successful operations of the system shall essentially be under the scope of the SI and for that no extra charges shall be admissible. SI shall implement, integrate and deliver the following systems and components with provisioning of ICT infrastructure:



Integration: Integration of various ICT solutions with ICCC/ City operation platform will be the joint responsibility of both the vendors:

1. **Data Center, IoT Platform and city operation platform provider (MSI at tate Level)**

State level MSI has to ensure that the data transmitted from sensors is seamless received and processed at IOT platform and available for visualization at city operation platform. State vendor has to apply business logic as per the functional requirement (Use cases) of the user.

2. **ICT Solution Provider (LSI at City Level)**

City level SI has to ensure that the all the IOT devices and system application hosted at data center work as per the SLAs. Data required for IOT platform and city operation platform has to be sent in the most flexible manner as per the requirement of state vendor. If required, an interface needs to be developed for data transmission to IOT platform/city operation platform in the required format.

Note*: It is recommended that the LSI go through the MSI RFP for a detailed understanding on the scope of work MSI

2.7.2 Solution Architecture

Functionally, Integrated Command and Control Centre is a city level initiative and originally is planned to establish it in each smart city. Since almost all city level services are same in nature, an indicative architecture of the solution envisaged under the “Integrated Command and Control Center and Smart Elements” scope is given below.

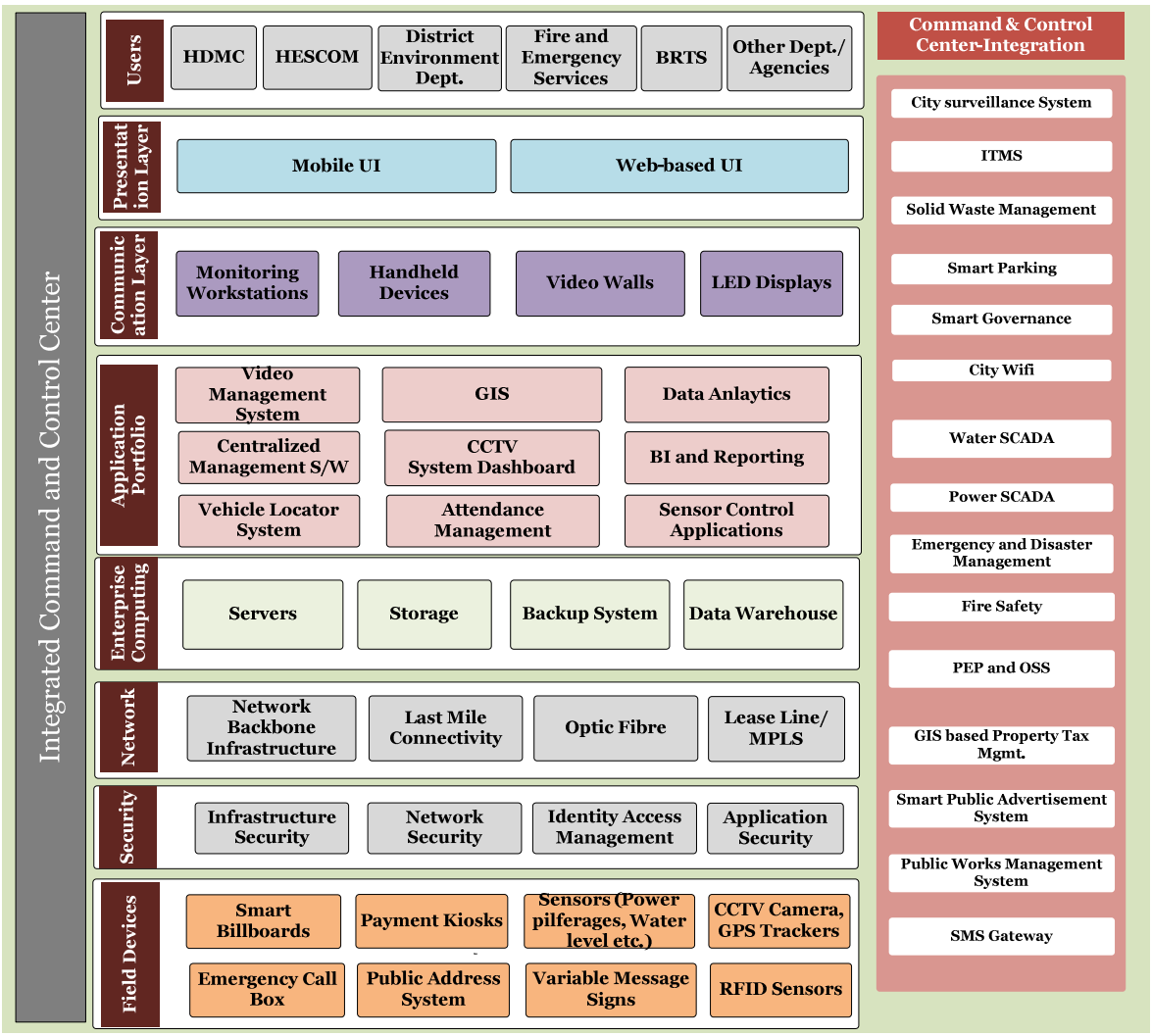


Figure 2 Solution Architecture

a. Field Device Layer

The field devices layer will contain display devices or bi-directional (input & output) devices connected to the network which will be used by citizens to consume - and for administrators to provide - actionable information. Such field devices include digital messaging boards, environmental data displays, public address system etc.

This would also comprise of the sensors which will help the city administration gather information about the ambient city conditions or capture information from the edge level devices like cameras, environment sensors, GPS sensors, emergency call boxes, etc.

b. Security Layer

As ambient conditions, actuators and display devices are now connected through a network and send data to business applications, security of the entire system becomes paramount:

- Infrastructure security- including policies for identity and information security policies
- Network security- including policies and practices adopted to prevent and monitor unauthorized access, misuse, modification, or denial of a computer network and network-accessible resources, etc.
- Identity and Access Management – including user authentication, authorization, SSL & Digital Signatures
- Application security- including Hosting of Government Websites and other Cloud based services, Adoption of Technical Standards for Interoperability Framework and other standards published by Government of India for various e-Governance applications
- End device security, including physical security of all end devices such as display boards, emergency boxes, kiosks etc.

Following security parameters should be included for all smart elements, but not limited to:

- User/administrator audit log activity (logon, user creation, date-time of PA announcements, voice recording etc.)
- Secured data storage (storage of video/image/voice/location/data captured by various smart elements)
- SSL/TLS encryption for web and mobile application based interfaces for sensitive data transfer
- Protection against Denial of Service (DoS) and Interference attacks to public Wi-Fi Devices

c. Network Layer

The secured network layer will serve as the backbone for the project and provide connectivity to gather data from sensors, share the data with business applications and transmit messages to display devices and actuators. It will support the Wi-Fi services and other smart elements (sensors and displays) at given locations. The network layer will be scalable such that additional sensors, actuators, display devices can be seamlessly added and more Wi-Fi spots created in future. Provisioning of bandwidth is included in the scope of the MSI; however, network connectivity at the city level, from the field devices is in the scope of LSI.

This layer would be integrating with provisions available for Network Connectivity within the city which includes.

- Lease line/MPLS connectivity
- Internet connectivity procured

d. Enterprise Computing Layer

The business applications will need the appropriate hosting infrastructure considering their criticality to deliver services. The IT Infrastructure required for hosting will include Storage, Compute and Processing capabilities that are aligned with the non-functional requirements for the business applications.

e. Applications Layer

The Applications layer will contain data aggregation and management systems (rules engines, alerting systems, diagnostics systems, control systems, messaging system, events handling system), and reporting / dashboard system to provide actionable information to city administrators and citizens. This layer would comprise of the applications developed to receive data from field devices for each city domain. Applications in this layer will integrate with the ICCC solution to share data and also generate advanced analytics through correlations. This will be an evolving layer with applications added as and when newfunctions are identified by the stakeholders.

f. Integration Layer

While aspects of ambient conditions within the city will be gathered through various sensors deployed, some city specific data will come from other government and non-government agencies. It is through the integration layer – that data will be exchanged to and from the under lying architecture components and other data from system developed by government (such as police department, meteorological department, street lights department, water department, irrigation department, transport organizations within Hubballi-Dharwad etc.) and non-government agencies. The various integrations have been listed below:

1) City Surveillance System
2) ITMS
3) Solid Waste Management
4) Smart Parking
5) Smart Governance
6) City Wi-Fi
7) Water SCADA
8) Power SCADA
9) Emergency and Disaster Management
10) Fire Safety
11) PEP-OSS
12) GIS Based Property Tax Management System

13) Smart Public Advertisement System
14) Public Works Management System
15) SMS Gateway etc.

g. Communication Layer

This layer defines the various presentation channels and includes the following –

1) Monitoring Workstations
2) Handheld Devices
3) Video Walls
4) LED Displays

h. Presentation Layer

There will be two modes of presentation to the users accessing the ICCC system –

1) Mobile UI – mobile based UI shall be for the senior management officials who would be accessing the system for very quick and faster flow of information exchange. This would cover less of the functions of the system as it would be largely designed for accessing by the senior management.
2) Web-based UI – web-based UI for the other officials who would be accessing the system for the information required for their respective departments

i. Integrated Command and Control Center Layer

This is the overarching layer that integrates with the business applications that receive data from field devices. The Integrated Command and Control Centre application presents a Common Operating Picture which will enable citizens and administrators alike to get a holistic view of city operations. The application will integrate with the GIS layer to represent the real-time operational state on the map for easy visualization.

2.8 Scope of services

2.8.1 Implementation and Integration Services

The solutions identified for implementation and/or integration are as per the table in section 2.3.

The LSI's scope of work shall include but will not be limited to the following broad areas. Details of each of these broad areas have also been outlined in Section 4.

1. **Assessment, Scoping and Survey Study:** Conduct a detailed assessment, scoping study and develop a comprehensive project plan, including:
    a. Assess existing systems, street infrastructure and connectivity within the city for the scope items mentioned in Section3.

b. Identify delivery dependencies across various city-wide projects being executed under the Smart Cities Mission or other State/Centre funded schemes and accommodate that in the project plan.
c. Conduct site survey for finalization of detailed technical architecture, gap analysis and project plan
d. Conduct site surveys to identify need for site preparation activities
e. Obtain site Clearance obligations & other relevant permissions
f. Develop the Concept of Operations (CONOPS) for carrying out city operations efficiently between the ICCC and various city departments/agencies.

2. **Design, Supply, Installation, Commissioning and Testing of the components listed above**
   a. **Phase I:** Implementation and Integration of Integrated Command and Control Centre and SmartElements
   b. **Phase II:** Integration of other ICT systems with Integrated Command and Control Centre
3. **Operation and Maintenance Phase -**

   The LSI will also be responsible for supply of IT solution for the management of hardware and application software, networking, installation, Training, Maintenance and operations of the solution for remaining years in the 5 year period (The Total Project Period includes Go-Live timelines) from the Go Live date of implemented solutions for Hubballi-Dharwad in an efficient and effective manner. Considering Phase 1 will Go-Live after 9 months (Refer Section 6), the O&M period of Phase 1 will commence after Go-Live and will be for a period of 4 Years 3 Months (5 Years of project duration minus implementation period) Refer Phase 1. Warranty period of the product supplied under project i.e. hardware, software, IT/Non-IT etc., will be considered after phase wise Go-Live.
4. Integrate with provisions available for Network Connectivity within the city which includes**:**
   a. Fiber optic network
   b. Lease line/MPLS connectivity
   c. Internet connectivity procured through a separate tender
5. Provisioning Hardware and Software Infrastructure which includes design, supply, installation, and commissioning of IT Infrastructure at Integrated command control center. This consist of:
   a. Basic Site preparation services
   b. IT Infrastructure including hardware and license
   c. Command Center infrastructure including operator workstations, IP phones, joystick controller etc.
   d. Establishment of LAN and WAN connectivity at command center limited to scope of infrastructure procured for the project.

e. Application integration services with other HDSCL applications

6. Capacity Building for HDSCL and any other department which includes preparation of operational manuals, training documents and capacity building support, including:
   a. Training of the city authorities, department personnel and operators on operationalization of the system
   b. Support during execution of acceptance testing.
   c. Preparation and implementation of the information security policy, including policies on backup and redundancy plan
   d. Preparation of revised KPIs for performance monitoring of various urban utilities monitored through the system envisaged to be implemented
   e. Developing standard operating procedures for operations management and other services to be rendered by ICCC
   f. Preparation of system documents, user manuals, performance manuals, Operation manual etc.

2.8.2 Assessment, Site Survey and project plan

After signing of contract, the LSI needs to deploy local team (based out of Hubballi-Dharwad) proposed for the project and ensure that a Project Inception Report is submitted to HDSCL which should cover following aspects:

1. Names of the Project Team members, their roles and responsibilities
2. AS-IS Assessment of the existing ICT Infrastructure at departments in-scope
3. Approach and methodology to be adopted to implement the Project (which should be in line with what has been proposed during bidding stage, but may have value additions / learning in the interest of the project).
4. Responsibility matrix for all stakeholders
5. Risks the SI anticipates and the plans they have towards their mitigation
6. Detailed project plan specifying dependencies between various project activities / sub-activities and their timelines
7. Installation locations geo mapped preferably on google earth to visually identify the geographical area.
8. The LSI shall conduct a comprehensive As-Is study of the existing infrastructure of Solid Waste Management System, Locations of Public Wi-Fi Hot Spots, Smart Poles Locations to establish the key performance indicators (KPIs) for the project. The KPIs of the study shall be included in the survey.

9. The LSI shall study the existing business processes, functionalities, existing management systems and applications including MIS reporting requirements.

Additionally, the LSI should provide detailed designs specifying the following:

1. High Level Design (including but not limited to) Application architecture, Logical and physical database design, Data dictionary and data definitions, ER diagrams and other data modelling documents and Physical infrastructure design for devices on the field
2. Concept of Operations for the TO-BE state that covers – Layout of the ICCC, Staffing Requirements, Standard Operating Procedures, Operations Model for 24/7 coverage, Roles and Responsibilities
3. Application component design including component deployment views, control flows, etc.
4. Low Level Design (including but not limited to) Application flows and logic including pseudo code, GUI design (screen design, navigation, etc.), Database architecture, including defining data structure, data dictionary as per standards laid-down by Government of India/ Government of Karnataka.
5. Location of all field systems and components proposed at the junctions, (KML /KMZ file plotted on GIS platform like google earth etc.)
6. Location of Network Provider's Point of Presence (PoP)
7. Design of Cables, Ducts routing, digging and trenching
8. Electrical power provisioning
9. **Open Standards -** System should use open standards and protocols to the extent possible without compromising on the security
10. **Convergence** - HDSCL has already initiated many projects which have state of the art infrastructure at field locations deployed under them. The City Surveillance Infrastructure should be made scalable for future convergence needs. Under the smart city program, HDSCL has envisaged to create a state of the art infrastructure and services for the citizens of Hubballi-Dharwad, hence it is imperative that all infrastructure created under the project shall be leveraged for maximum utilization. Hence the LSI is required to ensure that such infrastructure will allow for accommodation of equipment's being procured under other smart city projects. The procedure for utilization of the infrastructure will be mutually agreed between the HDSCL and LSI.
11. Sub-contracting / Outsourcing shall be allowed only for the work which is allowed as mentioned in this clause with prior written approval of HDSCL. However, even if the work is sub-contracted / outsourced, the sole responsibility of the work shall lie with the LSI. The LSI shall be held responsible for any delay/error/non-compliance etc. of its sub-contracted vendor. The details of

the sub-contracting agreements (if any) between both the parties would be required to be submitted to HDSCL. Sub-contracting / outsourcing would be allowed only for work such as:

i. Field Surveys required for the projects in scope
ii. Passive Networking & Civil Work during implementation,
iii. FMS staff for non- IT support during post-implementation

2.8.3 Site Clearance obligations & other relevant permissions

Prior to starting the site clearance, the LSI shall carry out survey of field locations for buildings, structures, fences, trees, existing installations, etc. The HDSCL shall be fully informed of the results of the survey and the amount and extent of the demolition and site clearance, if required, shall then be agreed with the HDSCL.

2.8.4 Integrated Command and Control Centre

The LSI has to implement, integrate and operationalize all the smart components at centralized command and control center with an integrated operations and dashboard application that will integrate various Smart City components implemented in this project. ICCC platform and data center service will be provided by State level MSI.

The Bidder will be required to integrate already implemented services / IT Solutions in the city and also scope to integrate services which are proposed to be implemented by any of the line departments, City Corporation or smart city SPV in near future.

The scope of the project for LSI includes implementation of identified smart ICT solutions including establishment of city ICCC and integrate the implemented solutions with ICCC. LSI Scope also includes conduct a detailed assessment of current state of city services being provided and accordingly plan, design a comprehensive technical architecture of ICCC so that relevant current and future ICT project may be integrated with ICCC. Design and establishment of data center is not in the scope of LSI. Data center services (hosting etc.) and city operation platform will be provided by KUIDFC (through MSI). For various ICT solutions to be implemented, the LSI has to provide edge devices, network connectivity (Sensor to Data Centre) and application software and other required components (except data center part). Compute and storage components of the solution will be provided by KUIDFC. From City ICCC to KMDS data center, connectivity will be provided by KSWAN (10 MBPS). Internet connectivity at City ICCC and KMDS will also be provided by KSWAN with 4 MBPS uplink and 4 MBPS downlink.

As part of scope the LSI is expected to integrate various ICT initiatives of the city with ICCC. These ICT initiatives may be from other departments' services like Water, Electricity, Police, and Transport etc.

The LSI shall have the overall responsibility to design, build, implement, operate, and maintain the project (at city level) for a period of five years.

Following table provides the scope, objective and the high level scope for implementation of City Integrated Command and Control Centre:

Feature	Objective	High Level Scope

City Integrated Command and Control Center (City ICCC)	Key Objectives of the City ICCC:
	• To serve as a centralized decision making center which supports and strengthens coordination in response to incidents/emergency situations
	• To serve as central information, communication, incident management hub for HDSCL
	• To provide integration points for other existing or proposed command center from other government agencies e.g. Police, Disaster, etc.
	• To serve as the centralized monitoring & decision making hub for managing equipment, devices, resources and assets
	• City ICCC will enable city administration and its stakeholders in the following:
	  • Effective decision making
	  • Delivering effective governance by aggregating various data feeds from sensors and systems
	  • Providing interface/ dashboards to generate alert & notifications in real time
	  • Quick and effective response to emergency or disaster situation
		Setting up city ICCC with 15operators control room and operations and Maintenance of the command center for contract duration.

The graphic below shows some of the features and projects to be integrated with ICCC. Some of these are already functional and some are the projects envisaged in future. City ICCC platform will be provided by KUIDFC.

The following table captures the scope that has to be delivered through the ICCC solution:

		Function	Relevant CCC Use Cases	Data Feed Frequency	Dataset Required	Visualize	Monitor	Communicate	Coordinate	Control	Report
PHASE 1	1	Solid Waste Management	Show position of Fleet on the city map	Real-time	Real-time/Near real-time location of the Fleet						
			Display type of fleet vehicle	Batch (Quarterly)	Categorized information of various fleet types available in the city						
			Show status of Garbage collection by ward	Real-time	Real-time/Near real-time status of Garbage collection in each ward						
			Receive and Display Surveillance Feed	Real-time	Real-time/Near real-time feed of Surveillance Cameras						
	2	Public Transport (BRTS)	Show position of Buses on the bus route	Batch (Quarterly)	Documentation of Bus Routes						
				Real-time	Real-time/Near real-time location of the Buses						
			Monitor Bus Shelters through Surveillance	Real-time	Real-time video feed from Bus Shelters						
	3	Traffic and Police	Show location of traffic lights	Batch (Quarterly)	Location coordinates of traffic light installations at junctions						

			Show Status of Traffic Lights	Real-time	Real-time/Near real-time status of traffic lights downtime							
	4	Gardens	Identify Location of Parks/Gardens	Batch (Quarterly)	Location coordinates of Parks/Gardens							
			Display amenities at the Parks/Gardens	Batch (Quarterly)	Documented details of amenities available							
	5	Housing & Slums	Display details of the Housings and Slums	Batch (Quarterly)	Documented details of Number of Households in the Housing/Slum							
PHASE 2	6	Electricity / Power	Identify location of Energy Assets	Batch (Quarterly)	Location coordinates of Energy Assets							
			Show the Energy Network on GIS map	Batch (Quarterly)	Location of Energy network (pipelines) across the city							
			Identify status of Energy Assets (Sub-stations, Transmission network etc)	Real-time	Real-time/Near real-time status of energy assets downtime							
			Display heatmap of high energy usage areas	Batch (Daily)	Meter Readings from various Commercial and Residential installations with their location details							
			Forecast Demand	Batch (Daily)	Energy usage across 5 previous years							
	7	Smart Poles	Identify location of Smart Poles	Batch (Quarterly)	Location coordinates of Smart Poles							
			Show Status of Smart Poles - Wifi Hotspots	Real-time	Real-time/Near real-time status of Wifi							

					Hotspots functioning							
			Show Status of Smart Poles - Panic Button/Emergency Call Box	Real-time	Real-time/Near real-time status of Panic Button/Emergency Call Box functioning							
			Show Status of Smart Poles - Public Address System	Real-time	Real-time/Near real-time status of PAS functioning							
			Show Status of Smart Poles - Environmental sensors	Real-time	Real-time/Near real-time status of Environmental Sensors functioning							
			Show Status of Smart Poles - Smart Billboards	Real-time	Real-time/Near real-time status of Smart Billboards functioning							
			Show Status of Smart Poles - Surveillance	Real-time	Real-time/Near real-time status of Surveillance Cameras functioning							
			Show Status of Smart Poles - LED Lights	Real-time	Real-time/Near real-time status of LED Lights functioning							
			Show Status of Smart Poles - Solar Panel	Real-time	Real-time/Near real-time status of Solar Panel functioning							
			Receive and Display Surveillance Feed	Real-time	Real-time/Near real-time feed of Surveillance Cameras							
			Receive and Display Environmental Sensor Feed	Real-time	Real-time/Near real-time feed of Environmental							

					Sensors							
			Broadcast message on PAS	Real-time	Message to be broadcast on PAS							
			Play music on PAS	Real-time	Music tracks to be played on PAS							
			Receive and Send messages through Panic Button/Emergency Call Box	Real-time	NA							
	8	Smart Parking	Identify location and number of Parking Slots	Batch (Quarterly)	Location coordinates and Information of Parking facilities							
			Show availabiltiy status of Parking Slots	Real-time	Real-time/Near real-time status of Parking Occupancy (2-wheeler and 4-wheeler)							
			Show Revenue Collections by each Parking Facility	Real-time	Real-time/Near real-time status of Parking Fee Collections (2-wheeler and 4-wheeler)							
	9	Street Lights	Identify location of Street Lights	Batch (Quarterly)	Location coordinates of Street Lights							
			Control Street Lights status	Real-time	Real-time/Near real-time status of street lights functioning							
			Show Status of Street Lights	Real-time	Real-time/Near real-time status of street lights functioning							

	10	Property Taxes (HDMC-Revenue)	Show the Properties on GIS map	Batch (Quarterly)	Location geo-fenced coordinates of Properties							
			Display heatmap of tax collections by each ward	Batch (Weekly)	Tax collections data by each ward							
	11	E-Governance	Show Population by each ward	Batch (One time upload)	Base Population data based on latest census							
				Batch (Monthly)	Birth and Death data at a regular frequency							
			Show location of HD One centres	Batch (Quarterly)	Location coordinates of HD Once centres							
			Transmit information to citizens through PEP-OSS	Real-time	Data/Information that has to be broadcast to citizens							
			Show status of Greviences by Ward	Batch (Daily)	Details of Greviences received at HDMC							
			Show location of Public Advertisement Boards	Batch (Quarterly)	Location coordinates of Public Adverisements							
			Show Public Advertisements availability status	Batch (Daily)	Booking status of Public Advertisements							
			Display heatmap of advertisement tax collections by each ward	Batch (Weekly)	Tax collections data by each ward							
			Show location of Public Works	Batch (Daily)	Location coordinates of Public Works being executed							
	12	Disaster Management	Identify Disaster Impact Area on map	Real-time	Coordinates to Geofence the Disaster							

					Zone							
			Respond to Disaster Situation	Real-time	Documented Standard Operating Procedures							
	13	Emergency Management	Identify Location of Fire Hydrants	Batch (Quarterly)	Location coordinates of Fire Hydrants							
			Show position of Fleet on the city map	Real-time	Real-time/Near real-time location of the Fleet							
			Display type of fleet vehicle	Batch (Quarterly)	Categorized information of various fleet types available in the city							
			Respond to Emergency Situation	Real-time	Documented Standard Operating Procedures							
	14	Water	Identify location of Water Assets	Batch (Quarterly)	Location coordinates of Water Assets							
			Show the Water Network on GIS map	Batch (Quarterly)	Location of water network (pipelines) across the city							
			Identify status of Water Assets (Overhead Tanks, Pumps etc)	Real-time	Real-time/Near real-time status of Water assets downtime							
			Display heatmap of high water usage areas	Batch (Daily)	Meter Readings from various Commercial and Residential installations with their location details							
			Identification of Non-Revenue water	Batch (Quarterly)	Water inflow details across the water network							

All the hardware and software scopes related to ICCC will be the responsibility of the bidder.

3. Layered View of ICT Solutions

3.1 Level 1: Integrate and View

Certain components will be integrated using direct feeds, dashboards and sharing of alerts/ actionable inputs for integrate and view operations, such as:

1. City Surveillance System (Police and Traffic)
2. Smart Governance
3. People Empowerment Platform
4. Disaster and Emergency Management
5. Intelligent Transport Management System
6. Electric SCADA
7. Water SCADA

3.2 Level 2: Integrate Command and Control

1. SMART Parking & Payment System
2. Smart Poles
3. CCMS for LED Street Lights
4. GIS Based Property Management System
5. Sewerage and Storm Water Drainage System

3.3 Level 3: Implement, Command, Control and Fully Operate

1. Integrated Command and Control Center (ICCC)
2. Smart IT Solid Waste Management
3. Geographical Information System (GIS)

4. Detailed Scope of Work

Level 1: Integrate and View

4.1 City Surveillance System

The city of Hubballi-Dharwad has been under video surveillance through cameras deployed across the city by the Police and Traffic departments. While some of these cameras are not functioning, the remaining cameras provide a potential for the live video to be shared with ICCC for monitoring functions of other departments too (Black spot monitoring, Event Management, Green Corridor management etc.). In addition to these existing cameras, new set of cameras are being deployed at various spots at the city to monitor SWM waste disposal lifecycle. Further, additional cameras are being deployed as part of the Smart Poles project. In essence, all these cameras have to be integrated with the existing VMS at the Police and Traffic data centre. All this will be monitored closely to identify incidents (pre-incident and post-incident).

At present there are two CCTV control centers in Hubballi-Dharwad city. One is for traffic management which is managed by traffic police and another is to control law and order. ICCC has to be integrated with both of these control centers for live viewing of the feed through ICCC.

Traffic: To manage the traffic, 45 CCTV cameras are installed at various traffic junctions in the city. They are connected through RF to control room. Control room is on the third floor of office of the Assistant Commissioner. The overall system is installed by Trinity Software Solution.

Law and Order: Another control room is in the office of Commissioner of Police. Under this project CCTV cameras are installed on towers. There are 22 towers installed at important place of the city. Each tower has 4 cameras hence there are total 88 cameras connected to control room. Here too, the cameras are connected to control room through RF. Camera make is HIKVISION.

It is envisaged to integrate both the control centers with ICCC so that operator at ICCC can watch live feed of any camera sitting in the city ICCC. Video may also be stored at city ICCC or City Operation Center as per the user's requirement. Following are some of the use cases for integration:

Department / Function	Relevant ICCC Use Cases	Data Feed Frequency	Dataset Required
Traffic and Police	Show location of traffic lights	Batch (Quarterly)	Location coordinates of traffic light installations at junctions

	Show Status of Traffic Lights	Real-time	Real-time/Near real-time video feed of traffic junctions

4.2 Smart Governance

An initiative to move towards digital operations is underway at HDMC. The systems being implemented through this e-Governance initiative need to be integrated with the ICCC to generate insights. In most cases, correlating the e-Governance datasets with GIS map provides insightful intelligence that can be used to optimize municipal operations at HDMC. The key objective of this project is to implement multiple e-government solutions to automate the functioning of HDMC and its departments. Following are the e-governance solutions that need to be covered are:

a. Paperless office at HDMC

b. Smart Property Taxes Management System

c. People empowerment Platform/One Stop Mobile App & Web based solution

d. Smart Public Works Management System

e. Smart Public Advertisement Management System.

All above solutions have to be integrated with ICCC for report and monitoring purpose so that Dashboard can be seen and & Reports are generated at Integrated Command & Control Centre. ICCC will be required to integrate with the backend system of all these 4 initiatives to monitor the performance of the application.

Along with this ICCC should be able to show the utilization by citizens of various services being delivered by these E-Governance modules in the form of a Dashboard.

All the information received from the application will also go into the Analytical layer which will help in decision making for city authorities, better planning and running of operations.

Department / Function	Relevant ICCC Use Cases	Data Feed Frequency	Dataset Required
E-Governance	Show Population by each ward	Batch (One time upload)	Base Population data based on latest census
	Show the details of birth & death registered	Batch (Monthly)	Birth and Death data at a regular frequency
	Show location of HD One centres	Batch (Quarterly)	Location coordinates of HD One centres
	Transmit information to citizens through PEP-OSS	Real-time	Data/Information that has to be broadcast to citizens
	Show status of Grievances by Ward	Batch (Daily)	Details of Grievances received at HDMC

	Show location of Public Advertisement Boards	Batch (Quarterly)	Location coordinates of Public Advertisements
	Show Public Advertisements availability status	Batch (Daily)	Booking status of Public Advertisements
	Display heat map of advertisement tax collections by each ward	Batch (Weekly)	Tax collections data by each ward
	Show location of Public Works	Batch (Daily)	Location coordinates of Public Works being executed

4.3 Emergency and Disaster Management

The city's Emergency and Disaster Management function could gain heavily from the surveillance feeds available at ICCC through cameras installed across the city while responding to critical incidents. Such live feed from the incident site can be used to guide the Field Operations team on the relevant actions that can be taken to recover the situation.

Apart from Fire emergency the department also responds to all type of emergencies whenever required by other departments. Departments runs awareness campaign to take precautionary measures to avoid any kind of fire emergency. Currently response to distress calls is manual. Assessment of equipment and man power required is carried out only after physical inspection of accident site.

GPS tracking of vehicles (Fire Engines) is planned. The project is being implemented at state level. It is expected that GPS will be installed and monitoring will start in Hubballi-Dharwad district in next 6 months.

Daily roll call to check water level of fire tender is done manually. There is no system to monitor live water levels of fire tenders. There is no linkage between estimating water requirement and intensity of accident. There are three fire stations in Hubballi-Dharwad district. Following are the details of assets fire department owns in the Hubballi-Dharwad City.

Assets Type	Hubballi	Dharwad	Amaragol
Fire Engines (fire tender)- with 4500 litre capacity (fire tender)	2	2	2
Varuna Vehicle (Small one)	1	0	-
Two Wheelers (MIST Technology	1	1	-
Advance Rescue Van	-	0	1

Water Tank of 16000 Litre	-	0	1
Sky Lift/ Ladder	-	0	1

Scope of work for LSI includes the integration of vehicle GPS monitoring with the ICCC. It is also envisaged that two operators will be sitting in the ICCC to respond to emergencies in the city. By this, department will be able to respond to the needs in emergency in quickly and efficiently. For example the intensity of fire can be seen through nearest CCTV camera and accordingly vehicle, manpower or any other resources can be planned to respond to the particular situation.

Department / Function	Relevant ICCC Use Cases	Data Feed Frequency	Dataset Required
Emergency and Disaster Management	Identify Disaster Impact Area on map	Real-time	Coordinates to Geofence the Disaster Zone
	Respond to Disaster Situation	Real-time	Documented Standard Operating Procedures
	Identify Location of Fire Hydrants	Batch (Quarterly)	Location coordinates of Fire Hydrants
	Show position of Fleet on the city map	Real-time	Real-time/Near real-time location of the Fleet
	Display type of fleet vehicle	Batch (Quarterly)	Categorized information of various fleet types available in the city
	Respond to Emergency Situation	Real-time	Documented Standard Operating Procedures

4.4 Intelligent Transport Management System

Overall ITMS system of Hubballi-Dharwad city can be divided into two parts:

1. Hubballi-Dharwad is currently implementing BRTS (Bus Rapid Transport System) and is expected to be operational by early 2018. The BRTS initiative involves the deployment of ITMS solution to monitor the operations at the BRTS Control Centre. The MSI should be able to integrate with the proposed ITMS solution and deliver the capability of representing the buses on the GIS map, showing their location in real-time.

2. Hubballi-Dharwad City wide ITMS solution: This is a city wide initiative that will be implemented by North-Western Karnataka Road Transport Corporation for city buses in Hubballi-Dharwad in the coming 6 months. The city buses will be fitted with GPS sensors and can be tracked in real-time. LSI and MSI (State Vendor) should be able to integrate the solution implemented in the city. Primarily integrating means the capability of representing the buses on GIS map, showing their location on GIS map in real time and creating real time/ non real time reports/ Dashboard at ICCC.

In addition to the above, there will be a provision to monitor the bus shelters through video surveillance installed. While BRTS stations will be deploying cameras as part of the ongoing BRTS project, there will be new cameras installed through the Smart Poles initiative at City Bus stops.

Department / Function	Relevant ICCC Use Cases	Data Feed Frequency	Dataset Required
Intelligent Transport Management System (ITMS)	Show position of Buses on the bus route	Batch (Quarterly)	Documentation of Bus Routes
		Real-time	Real-time/Near real-time location of the Buses
	Monitor Bus Shelters through Surveillance	Real-time	Real-time video feed from Bus Shelters

4.5 Smart Energy / Power

SCADA stands for Supervisory Control and Data Acquisition system. SCADA is a system of software and hardware elements, allows organizations to:

- Control processes locally or remotely
- Monitor, gather and process real time data
- Directly interact with edge devices like sensors and through Human Machine Interface (Software)
- It also records events as log file

Key applications of SCADA systems in city context are in Water and Power supply. Power system deals with power generation, transmission and distribution sectors, monitoring becomes the main aspects. SCADA also helps in better planning of power supply, demand and optimum utilization of power system resources.

In Hubballi-Dharwad, there is no SCADA implemented in the city power supply network currently. SCADA is implemented only at substation level by KPTCL. All the other systems are under Restructured Accelerated Power Development and Reforms (RAPDRP) project similar to other states including billing software.

Asset mapping is done on GIS MAP (Arc GIS). All Active components are mapped in GIS. There are 30, 000 transformers and 2, 40, 000 connections. Following are the initiative taken up by the department:

1. For implementation of smart meters tender is called by the Head Officer for Smart meter implementation for 3 cities- Hubballi, Dharwad and Belagavi.
2. There is one helpdesk for citizen (1912) which is being operated manually.
3. At city level one more new project is envisaged whereas city is divided into 12 zones and each zone will have one Maruti Van to address the complaint. GPS will be installed and vehicle monitoring will be done at city level to measure turnaround time for one complaint. Internally mapping of consumers of 12 areas is done with 12 vans. There will be no central station for vans. The vans will stay at the grievance site only after rectification.

LSI and MSI (State Vendor) are expected to integrate above mentioned current solutions and also the upcoming SCADA system in the city.

Functional Specifications: It is envisaged that whenever the power SCADA system is implemented in the department, the whole of the power supply network can be seen on the GIS map at ICCC.

1. Using data of SCADA system heat map can be seen and future demand forecast can be done.
2. By creating database of assets of the department assets can be located on GIS MAP in real time which may help in better operations of department.
3. ICCC should be a single point grievance cell for all types of complaint of the citizen.
4. ICCC should be a single window for all types of utilities application for citizen.

HESCOM would be using SCADA system to oversee the performance of its energy network in the future. This energy network and important energy assets need to be represented on the GIS map on the ICCC solution. Further, integration with SCADA system should give the operators at ICCC the capability to monitor the energy network operations in real-time and also periodically generate heat maps and dashboards to identify high energy use patterns.

Department / Function	Relevant ICCC Use Cases	Data Feed Frequency	Dataset Required
Smart Energy	Identify location of Energy Assets	Batch (Quarterly)	Location coordinates of Energy Assets
	Show the Energy Network on GIS map	Batch (Quarterly)	Location of Energy network (pipelines) across the city
	Identify status of Energy Assets (Sub-stations, Transmission network etc)	Real-time	Real-time/Near real-time status of energy assets downtime
	Display heatmap of high energy usage areas	Batch (Daily)	Meter Readings from various Commercial and Residential installations with their location details
	Forecast Demand	Batch (Daily)	Energy usage across 5 previous years

4.6 Smart Water

Hubballi-Dharwad has a 2000 km of pipeline network and approximately 1.5 Lakh connections. As part of 24x7 water supply project, the city plans to implement 600-700 kilometers network of 24x7 water supply with 40,000 connections. There is no SCADA system implemented in Hubballi-Dharwad as of now and this will also be implemented through the 24x7 project. While bulk water meters and water quality sensors will also be deployed through the 24x7 project, the Quality control of water at treatment plant is monitored online . With regard to billing, two separate billing softwares are used for Hubballi and Dharwad.

The 24x7 project is of 12 years with 4 years for execution time and 8 years of operation and monitoring.

It is envisaged that whenever the water SCADA system is implemented in the department, the whole of the water supply network can be seen on the GIS map at ICCC. This integration will be the responsibility of state-level SI (for ICCC) and the city-level SI will facilitate and coordinate the same.

Department / Function	Relevant ICCC Use Cases	Data Feed Frequency	Dataset Required
Smart Water	Identify location of Water Assets	Batch (Quarterly)	Location coordinates of Water Assets
	Show the Water Network on GIS map	Batch (Quarterly)	Location of water network (pipelines) across the city
	Identify status of Water Assets (Overhead Tanks, Pumps etc)	Real-time	Real-time/Near real-time status of Water assets downtime
	Display heatmap of high water usage areas	Batch (Daily)	Meter Readings from various Commercial and Residential installations with their location details
	Identification of Non-Revenue water	Batch (Quarterly)	Water inflow details across the water network

Level 2: Integrate Command and Control

4.7 Smart Parking & Payment System

Different type of ICT interventions (CCTV cameras, sensors, handheld fee collection machines etc.) will be installed on individual parking slot to uniquely identify the occupancy of these parking slots. Data of each parking location will come to the ICCC from the Smart Parking application. HDMC/public can monitor the real-time data of occupancy of parking slots. Detailed requirements which are to be integrated for smart parking are listed below.

a. Consolidating all city parking information onto a single operations platform.

b. ICCC will be required to receive feeds on the status of parking across the city which are managed under the smart parking project (feeds received from all the edge devices of the parking solution). These feeds will provide information of available, non-available parking slots, functional and non-functional parking slots. ICCC will be required to receive video feeds at city ICCC from the parking areas on real-time basis as per requirement. These video feeds will help monitor assets of HDMC. All the information received is to be plotted on the GIS map. ICCC should be able to trigger the commands/alerts (if required) to the respective parking solution.

c. The Parking availability status, at all times, should be available through the PEP-OSS mobile app for citizens. This should be driven by an integration between ICCC and PEP-OSS.

d. Should provide parking availability, revenue collection information on dashboard received from various sources on real time basis.

e. The platform should be able to gather data feed from the Smart Parking solution irrespective of the make, model, and communication protocols that the field devices operate upon.

Department / Function	Relevant ICCC Use Cases	Data Feed Frequency	Dataset Required
Smart Parking and Payment	Identify location and number of Parking Slots	Batch (Quarterly)	Location coordinates and Information of Parking facilities
	Show availabiltiy status of Parking Slots	Real-time	Real-time/Near real-time status of Parking Occupancy (2-wheeler and 4-wheeler)
	Show Revenue Collections by each Parking Facility	Real-time	Real-time/Near real-time status of Parking Fee Collections (2-wheeler and 4-wheeler)

4.8 Smart Poles

The basic premise of carpeting an area with high speed telecom service in urban centres is that it is more economical to the community to provide the service as a utility rather than to have individual households and businesses pay private firms for such a service. Such networks are capable of enhancing city management and public safety, especially when used directly by city employees in the field. They can also be a social service to those who cannot afford private high-speed services. When the network service is free and a small number of clients consume a majority of the available capacity, operating and regulating the network might prove difficult. HDMC intends to provide a cost effective and easy access to internet through multiple devices for all residents and commuters.

Intelligent pole popularly known as Smart pole combines the capabilities of telecom connectivity and LED lighting in a city, These poles are much refined and advance version of conventional Corporation Street Light pole, Apart from having the basic luminaire (LED Light) it has various other Smart components integrated essential for better civic management & providing better telecom communication channels. Leveraging on the telecom capability there are various other Smart components /Features can be integrated to Smart pole.

Major Components Envisaged to be integrated with Smart Pole can be categories as below

1) LED lights
2) CCTV Surveillance Cameras
3) Wi-Fi Access Points
4) Environmental Sensors
5) SMART Bill Boards
6) Public Address System
7) Panic Button/Emergency Call Box

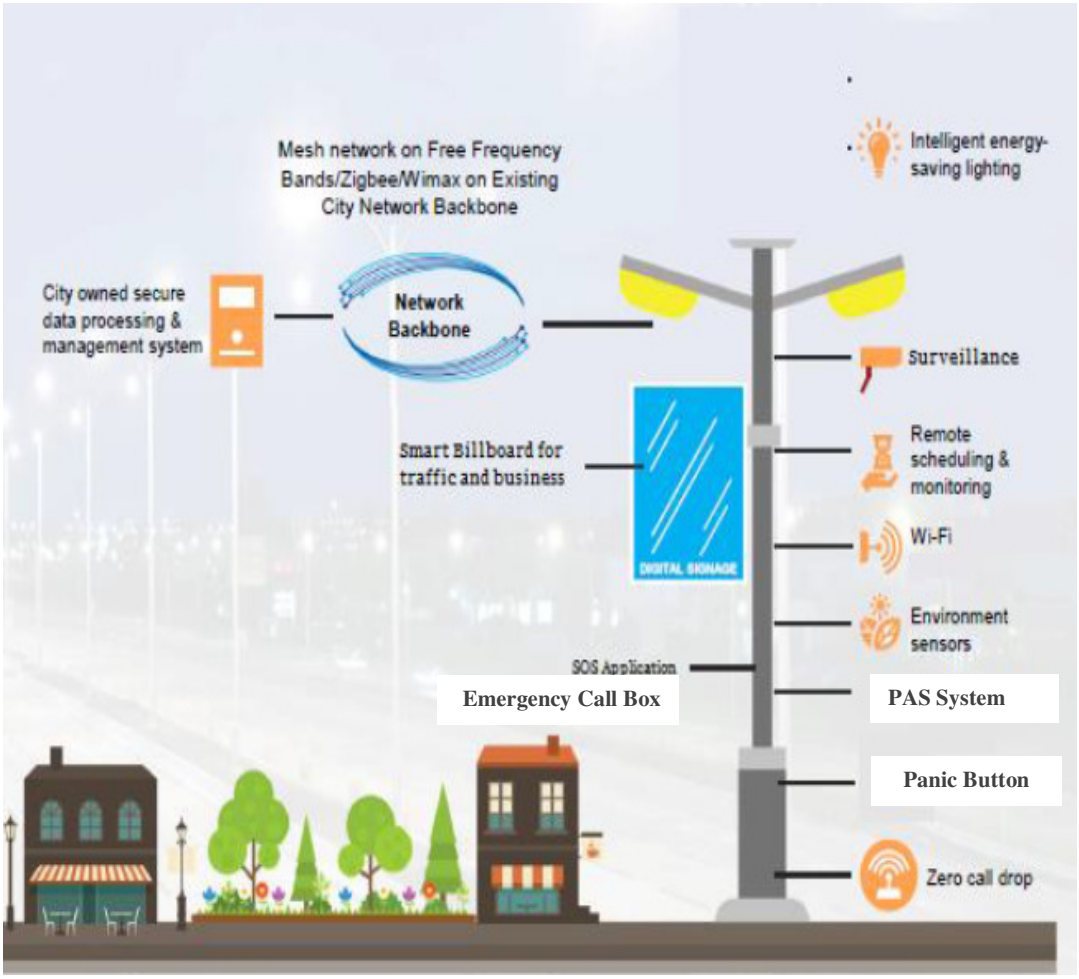


Figure 3 Component Diagram

The scope of work for the selected MSI will include Integration of the various components with ICCC.

1) **Smart Pole Location on GIS Map**: System should be able to show the Smart poles on a GIS Map with clear demarcation of Functional component installed.

2) **Wi-Fi Hotspots**: MSI to integrate the ICCC with City Wi-Fi system through the Smart Pole Control Solution and should be able to show the active/inactive Wi-Fi hotspot, with a further drill down with below mentioned details (these details are not limited, MSI may add further drill down)

    - Access Point Availability
    - Number of users connected
    - Data Upload/Download
    - Incident reporting for any Network Breach
    - Average speed per access point and total for per hotspot
    - Average speed per user per access point and total for per hotspot

- Number of paid users active

(These information should be available to fetch reports for the Day/Month/Year)

3) **Panic Button/Emergency Call Box** – ICCC to integrate with City Panic Button interfaces through the Smart Pole Control Solution and should be able to generate alarm and trigger ticket to concern authority for subsequent action. Also two way communication from Emergency call box to be established over IP phone to ICCC.
4) **Public Address System** – Public address system shall be use to meet the below mentioned requirements of the city
    - Important Announcement from command and control center
    - Play music through PAS system with support from multiple input device, with music player, streamer and announcement.
5) **Environmental sensors** – Data feed from various Environmental sensors through the Smart Pole Control Solution should be available at the ICCC. The key inputs from sensors like Temperature, Humidity, CO, CO2, NO2, SO2, PM10, and PM2.5 are monitored. Further, awareness within the city increased based on dynamic inputs received from sensors and display output to various interfaces including city application, multi-services ,Integration with GIS map
6) **Smart Billboards** – Integration with SMART Bill boards through the Smart Pole Control Solution provides the capability to provide feed to individual SMART Bill boards from command and control center. This feed can be video or still images. System should support various formats of media for individual or group level bill boards.
7) **Surveillance Cameras –** Integration of ICCC with Video Management Solution should help monitor live feeds from cameras deployed across the city. MSI to deploy the adequate storage to store the camera feed 30 days of storage for all camera feeds.
8) **LED Lights** – MSI to integrate with existing CCMS of LED lights. It should allow to monitor and control from central ICCC.

Department / Function	Relevant ICCC Use Cases	Data Feed Frequency	Dataset Required
Smart Poles	Identify location of Smart Poles	Batch (Quarterly)	Location coordinates of Smart Poles
	Show Status of Smart Poles - Wifi Hotspots	Real-time	Real-time/Near real-time status of Wifi Hotspots functioning
	Show Status of Smart Poles - Panic Button/Emergency Call Box	Real-time	Real-time/Near real-time status of Panic Button/Emergency Call Box functioning

	Show Status of Smart Poles - Public Address System	Real-time	Real-time/Near real-time status of PAS functioning
	Show Status of Smart Poles - Environmental sensors	Real-time	Real-time/Near real-time status of Environmental Sensors functioning
	Show Status of Smart Poles - Smart Billboards	Real-time	Real-time/Near real-time status of Smart Billboards functioning
	Show Status of Smart Poles - Surveillance	Real-time	Real-time/Near real-time status of Surveillance Cameras functioning
	Show Status of Smart Poles - LED Lights	Real-time	Real-time/Near real-time status of LED Lights functioning
	Show Status of Smart Poles - Solar Panel	Real-time	Real-time/Near real-time status of Solar Panel functioning
	Receive and Display Surveillance Feed	Real-time	Real-time/Near real-time feed of Surveillance Cameras
	Receive and Display Environmental Sensor Feed	Real-time	Real-time/Near real-time feed of Environmental Sensors
	Broadcast message on PAS	Real-time	Message to be broadcast on PAS
	Play music on PAS	Real-time	Music tracks to be played on PAS
	Receive and Send messages through Panic Button/Emergency Call Box	Real-time	NA

4.9 CCMS for LED Street Lights

The city is implementing LED street lights across the city and this will be controlled and monitored through the Central Control and Monitoring System (CCMS) that will be implemented as part of the initiative. This application will be integrated with ICCC to enable central monitoring of the LED street light infrastructure. The CCMS application will be used to monitor the status of 54131 lights across the city. The data feed from filed sensors will be arriving at the CCMS and an integration between the CCMS database and the ICCC application will be established to represent the live-status on the Common Operating Picture at ICCC.

The integration with CCMS should help realize the following functional use-cases for driving efficiency in operations.

- The format of the data packet (JSON/XML) that will be shared by the CCMS application needs to be consistent with the data model within ICCC database.

- Detail the API that should be available from the CCMS application that integrates with the ICCC application in order to share the data in the prescribed format at the prescribed frequency.
- Test the integration between the applications and ensure frequency of update is configured for optimum operational efficiencies
- Document the schedule of planned application downtimes (for CCMS) that could impact the operations at ICCC.

Department / Function	Functional Use Cases	Data Feed Frequency	Dataset Required
Street Lights	Identify location of Street Lights	Batch (Quarterly)	Location coordinates of Street Lights
	Control Street Lights status	Real-time	Real-time/Near real-time status of street lights functioning
	Show Status of Street Lights	Real-time	Real-time/Near real-time status of street lights functioning

4.10 GIS Based Property Management System

The GIS based property system will provide PIDs mapped on GIS for ease of tracking. This information would be very helpful in correlating with other city datasets. The city has an existing GIS application – ArcGIS from ESRI.

Note: The LSI will be responsible for creating the data layers from the data layers from the data that comes from GIS survey. The LSI and MSI (State Vendor) will be responsible for successful integration of GIS based property Management System with City operational Platform.

Department/ Function	Functional Use Cases	Data Feed Frequency	Dataset Required
Property Taxes (HDMC-Revenue)	Show the Properties on GIS map	Batch (Quarterly)	Location geo-fenced coordinates of Properties
	Display heat map of tax collections by each ward	Batch (Weekly)	Tax collections data by each ward

4.11 Any Other Sensor

The city will go for further field devices in the near, medium and long-term future. These should be brought on the ICCC platform to enhance the city services. For example, an integration could be sought in the future with cameras in Private and Public institutions. This should be possible at ICCC provided the cameras are ONVIF compliant. The solution has to be built on an Open Design so that such needs of the city can be accommodated.

Level 3: Implement, Command, Control and Fully Operate

4.12 Integrated Command and Control Center (ICCC)

4.12.1 Overview

The Bidder has to implement, integrate and operationalize all the smart components at centralized command and control center with an integrated operations and dashboard application that will integrate various Smart City components implemented in this project. City operation platform and data center services will be provided by MSI.Following are the key components of Integrated Command and Control Center:

1. ICCC application or city operation platform
2. IOT Platform
3. ICT Solutions of city (Sensor Layer)

ICCC platform receives data feeds from various IoT devices and these IoT devices will be the part of some of the ICT solution implemented in the city. For example, these IoT devices may be light sensors of Smart Light solution, sensor of bins under solid waste management, Wi-Fi Access points, Environmental Sensors of Smart pole solution.

From an implementation perspective ICCC design will be of centralized architecture. There will be single common IoT platform, city operation platform and Data center for all the Smart cities in the state of Karnataka. Implementation of ICCC will be at two levels:

- Common Data Center for Karnataka Smart Cities hosted at KMDS
    - Common Data Center to host Common Digital Platform managing sensors and controllers for all current and future cities, to connect with State Smart City Data Center (KMDS) through State KSWAN Network
    - Separate instances of Smart City Digital Platform for each City at data center
    - Common Disaster Recovery Center for Karnataka State Smart Cities
- Each city to have its
    - City Operation Room
    - Video Surveillance Infrastructure Connected to servers at city control room
    - Visualization Layer Management Components

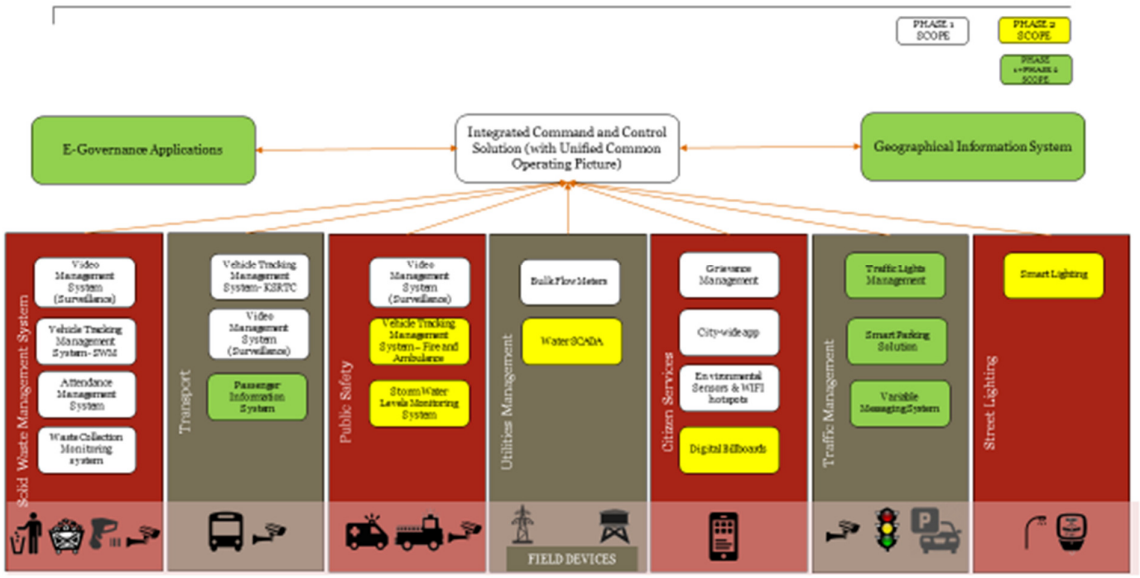
Following are the key features of this design:

- Common repository of data, to leverage the benefit of consolidation of ICT infrastructure
- The Disaster Recovery Center shall be taken up on cloud based technology and MeitY guidelines may be followed for the same, along with Business Continuity Plan (BCP) in place
- Cities may have a local Command Center and an optimal server room setup to meet any specific localized requirements of storing/hosting data (video)
- The common facility shall work on a "Hub and Spoke" architecture, connected with all Smart City ICT assets, infrastructure and applications
- State level Common GIS and Analytics Layer may be created in the future.

The Bidder has to implement, integrate and operationalize all the smart components at centralized command and control center with an integrated operations and dashboard application that will integrate various Smart City components implemented in this project. City operation platform and data center services will be provided by KUIDFC through MSI.

The Bidder will be required to integrate already implemented services in the city and also scope to integrate services which are proposed to be implemented by any of the line departments, City Corporation or smart city SPV in near future.

Following figure shows the operational model envisaged for ICCC:



4.12.2 IT Infrastructure at ICCC

1. It is proposed that the KUIDFC will provide the IT hardware infrastructure at the DC (KMDS) for successful operations of the systems. The DC will be hosted at KMDC. The ICCC has been envisaged to be established in an approximate area of 10000 Square Feet at upcoming Iconic Building, Hubballi-Dharwad. LSI has to ensure that redundancy is provided for all the key components to ensure that no single point of failure affects the performance of the overall system. It will be LSI's responsibility to supply, Install and Commission of IT Infrastructure including site preparation in ICCC. A secured data center environment will be provided to the LSI at the KMDS through KUIDFC (MSI).

2. The LSI should also provision for IT Infrastructureat city operation center to store video feeds from Surveillance Cameras that will be deployed across Hubballi-Dharwad with a retention period of 7 days. City operation center will be established in Hubballi Dharward at suitable space identified by HDSCL. The LSI shall provide system integration services to customize and integrate the applications procured through the project. The system applications proposed by the LSI should have open APIs and should be able to integrate and share the data with other third party systems already available or coming up in the near future.

3. The bill of material proposed by the successful LSI will be approved by HDSCL for its supply and installation.

4. The LSI shall be required to submit a detailed installation report post installation of all the equipment/system software at approved locations for different environments as required in the SDLC cycle. The report shall be utilized during the acceptance testing period of the project to verify the actual quantity of the equipment supplied and commissioned under the project.

4.12.3 Responsibility Matrix

#	Key Activities	Successful Bidder	HDMC	HDSCL	Network Vendors	Electricity Providers	Other Utilities	Other Departmen	PMC	Existing ICT Vendors at HDSCL
Project Inception Phase										
1	Project Kick Off	R/A	C	C	I	I	I	I	C	I
2	Deployment of manpower	R/A	C	C	I	I	I	I	C	I
Requirement Phase										

#	Key Activities	Successful Bidder	HDMC	HDSCL	Network Vendors	Electricity Providers	Other Utilities	Other Departmen t	PMC	Existing ICT Vendors at HDSCL
3	Assess the requirement of IT Infrastructure and Non IT Infrastructure	R/A	C	C	C	C	C	C	C	C
4	Assessment of Business processes	R/A	C	C	I	I	I	C	C	I
5	Assessment of requirement of Software requirements	R/A	C	C	I	I	I	C	C	I
6	Assess the Integration requirement	R/A	C	C	C	C	I	C	C	C
7	Assess the connectivity requirement all locations (including Building)	R/A	C	C	C	I	I	C	C	I
8	Assessment the Network laying requirement	C	C	C	R / A	I	I	C	C	I
9	Assessmen t of training requirement	R/A	C	C	I	I	I	C	C	I
Design Phase										
10	Formulatio n of Solution Architecture	R/A	C	C	C	I	I	C	C	I
11	Creation of Detail Drawing	R/A	C	C	C	I	I	C	C	I
12	Detailed Design of Smart City Solutions	R/A	C	C	C	I	I	C	C	I
13	Developm ent of test cases (Unit, System Integration and User	R/A	C	C	C	I	I	C	C	I

#	Key Activities	Successful Bidder	HDMC	HDSCL	Network Vendors	Electricity Providers	Other Utilities	Other Departmen	PMC	Existing ICT Vendors at HDSCL
	Acceptance)									
14	Preparation of final bill of quantity and material	R/A	C	C	C	C	I	C	C	I
15	CONOPS + SoP preparation	R/A	C	C	C	C	C	C	C	I
Development Phase										
16	Helpdesk setup	R/A	C	C	I	I	I	I	C	I
17	Physical Infrastructure setup	R/A	C	C	I	I	I	I	C	I
18	Procurement of Equipment , edge devices, COTS software (if any), Licenses	R/A	C	C	I	I	I	I	C	I
19	IT and Non IT Infrastructure Installation	R/A	C	C	I	I	I	I	C	I
20	Development, Testing and Production environment setup	R/A	C	C	I	I	I	I	C	I
21	Software Application customization (if any)	R/A	C	C	I	I	I	I	C	I
22	Development of Bespoke Solution (if any)	R/A	C	C	I	I	I	I	C	I
23	Data Migration	R/A	C	C	I	I	I	I	C	I
24	Integration with Third party services/application (if any)	R/A	C	C	I	I	I	I	C	I
25	Unit and User Acceptance	R/A	C	C	I	I	I	I	C	I

#	Key Activities	Successful Bidder	HDMC	HDSCL	Network Vendors	Electricity Providers	Other Utilities	Other Departmen	PMC	Existing ICT Vendors at HDSCL
	Testing									
26	Implementation of Solutions	R/A	C	C	I	I	I	I	C	I
27	Preparation of User Manuals , training curriculum and training materials	R/A	C	C	I	I	I	I	C	I
28	Role based training(s) on the Smart City Solutions	R/A	C	C	I	I	I	I	C	I
Integration Phase										
29	SoP implementation	R/A	C	C	C	C	C	C	C	I
30	Integration with GIS	R/A	C	C	C	C	C	C	C	I
31	Integration of solutions with Command and Control Centre	R/A	C	C	C	C	C	C	C	I
Go –Live										
32	Go Live	R/A	C	C	I	I	I	I	C	I
Operation and Maintenance										
33	Operation and Maintenance of IT, Non IT infrastructure and Applications	R/A	C	C	I	I	I	I	C	I
34	SLA and Performance Monitoring	R/A	C	C	I	I	I	I	C	I
35	Logging, tracking and resolution of issues.	R/A	C	C	I	I	I	I	C	I
36	Application enhancement	R/A	C	C	I	I	I	I	C	I
37	Patch & Version	R/A	C	C	I	I	I	I	C	I

#	Key Activities	Successful Bidder	HDMC	HDSCL	Network Vendors	Electricity Providers	Other Utilities	Other Departmen	PMC	Existing ICT Vendors at HDSCL
	Updates									
38	Helpdesk services	R/A	C	C	I	I	I	I	C	I

Note: All decisions will be taken by HDSCL which will be abided by all the stakeholders in the above matrix.

R/A = Responsible/Accountable

C = Consulted

I = Informed

4.12.4 Scope of Work of LSI/MSI

The roles & responsibilities of the LSI & MSI are defined in section 2.6 of this RFP.

Integration: Integration of various ICT solutions with ICCC/ City operation platform will be the joint responsibility of both the vendors (LSI and MSI):

Data Center, IoT Platform and city operation platform provider (State Level): State level MSI has to ensure that the data transmitted from sensors is seamlessly received and processed at IoT platform and available for visualization at city operation platform. State vendor has to apply business logic as per the functional requirement (Use cases) of the user.

ICT Solution Provider (City Level): City level LSI has to ensure that the all the IOT devices and system application hosted at data center work as per the SLAs. Data required for IoT platform and city operation platform has to be sent in the most flexible manner as per the requirement of state vendor. If required, an interface needs to be developed for data transmission to IOT platform/city operation platform in the required format.

4.12.5 Project Timelines

T1-Date of Signing the Contract

A. Activity		Individual phases of the activities	Timeline
		Phase-I (270 Days)	
1	Resource Mobilization	• Resource Mobilization	T1+15 Days
2	Implementation of ICT Solid Waste Management Application, and Fire emergency management (GPS installation for fire vehicle tracking)	• Inception Report • SOPs and Use-Cases for integration of individual ICT application with Common Command and Control Application	T1+30 Days
		Procurement of the hardware & software	T1+45 days

		infrastructure required for : • Implementation of Solution Components • Set-up of Command and Control Centre	
		FRS, SRS for implementation and integration of individual ICT application with Common Command and Control Application	T1+60 Days
		*Data Centre, DR & Common Operating Platform availability (Note: * - In the scope of MSI)	T1+60 days
		Installation & Commissioning of field devices and H/W , S/W required at the Command and Control Centre	T1+90 days
		Development and Testing of standalone application	T1+120 Days
		Testing of Application Integration	T1+150 Days
		Completion of Integration with UAT sign off	T1+ 180 Days
3	Integration of Common Command and Control Application (SOPs, Use Cases, FRS, SRS, Integration Testing) with	ICT Solid Waste Management Application	T2+270 days
		City Surveillance (Police Feed)	
		Intelligent Public Transport System	
		Intelligent Traffic Management	
		Smart Parking	
		VMS	
		e-Governance	
		Geographical Information System (GIS)	
4	Phase I operationalization & Go-Live	Go-Live	T1+270 days
Phase – II (271-450 Days)			
5	Phase II Implementation of Geographical Information System (GIS)	SOPs and Use-Cases for integration of individual ICT application with Common Command and Control Application	T1+300 Days
		Procurement of the residual/ additional hardware & software infrastructure required from phase I	T1+315 days
		FRS, SRS for implementation and integration of individual ICT application with Common Command and Control Application	T1+345 Days
		Installation & Commissioning of field devices	T1+360 days
		Development and Testing of standalone application	T1+390 Days
		Testing of Application Integration	T1+420 Days
		Completion of Integration with UAT sign off	T1+ 450 Days

6	Integration of Common Command and Control Application (SOPs, Use Cases, FRS, SRS, Integration Testing) with	Integration of City surveillance (Other than police feed) with City ICCC. Provision to see live feeds at authorized places.	T1+ 450 Days (271-450 Days)
		Street Light Control	
		Digital Signage (ABD Area)	
		Variable Messaging System (ABD Area)	
		Geographical Information System (GIS)	
		e-Governance	
		Water SCADA	
		Fire, Emergency and Disaster Management	
7	Phase II operationalization & Go-Live	Go-Live	T1+450 days

4.13 Smart IT Solid Waste Management

4.13.1 Scope of Work

The scope of work for the selected LSI will include supply, installation and implementation of Web based tracking and monitoring system with RFID, camera surveillance and GPS combined with integration with existing systems at HDMC. Along with that, it will also include the post implementation support and maintenance of RFID, camera surveillance and GPS Tracking and Monitoring solution.

Presented below is the Situational Assessment across the SWM Lifecycle:

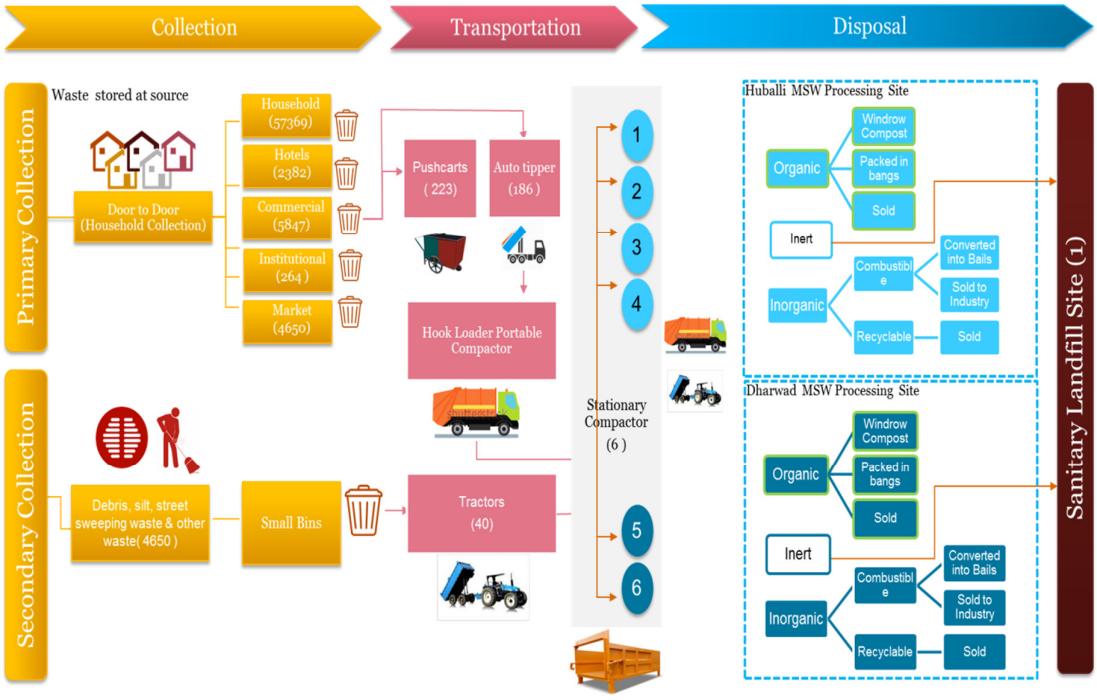


Figure 4 Situational Assessment

The proposed solution will map to this lifecycle in the following manner:

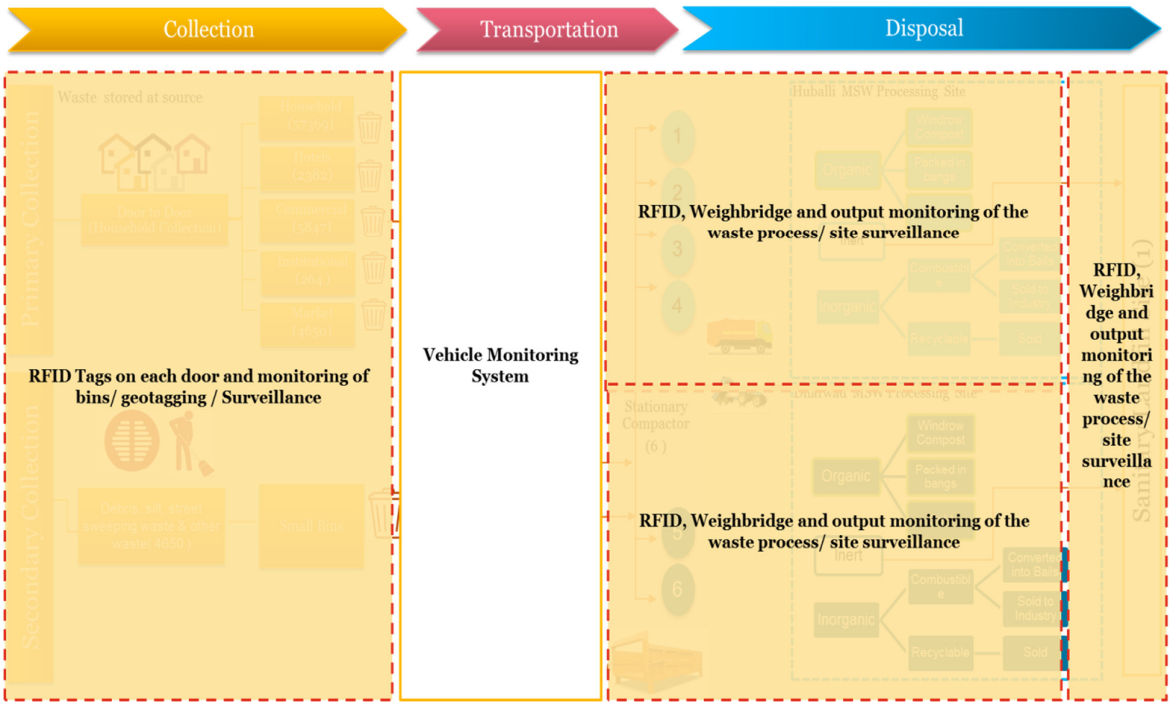


Figure 5 Lifecycle of SWM

The overall Smart SWM Solution being proposed for HDMC will include multiple ICT components that will work together to deliver value:

Smart Integrated SWM

1. Door to Door RFID based monitoring
2. Vehicle tracking and monitoring (Existing)
3. Weighbridge monitoring (Existing)
4. Remote staff attendance(Existing)
5. Work allocation to staff (Existing)
6. Smart bin monitoring
7. Dashboards
8. Call center management
9. Datacenter

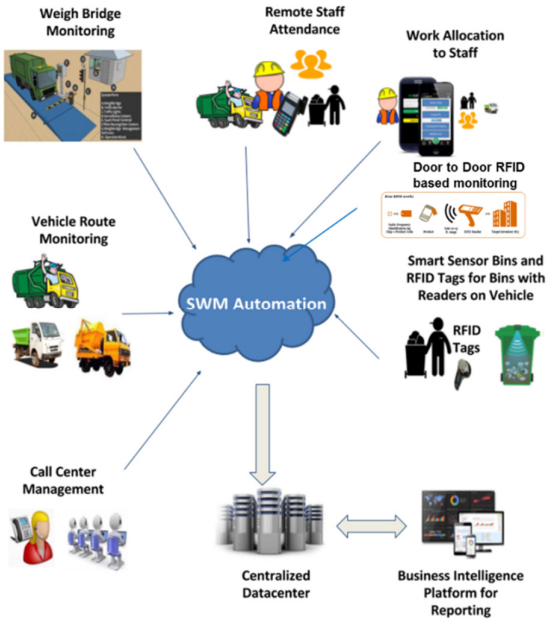


Figure 6 Smart SWM Components

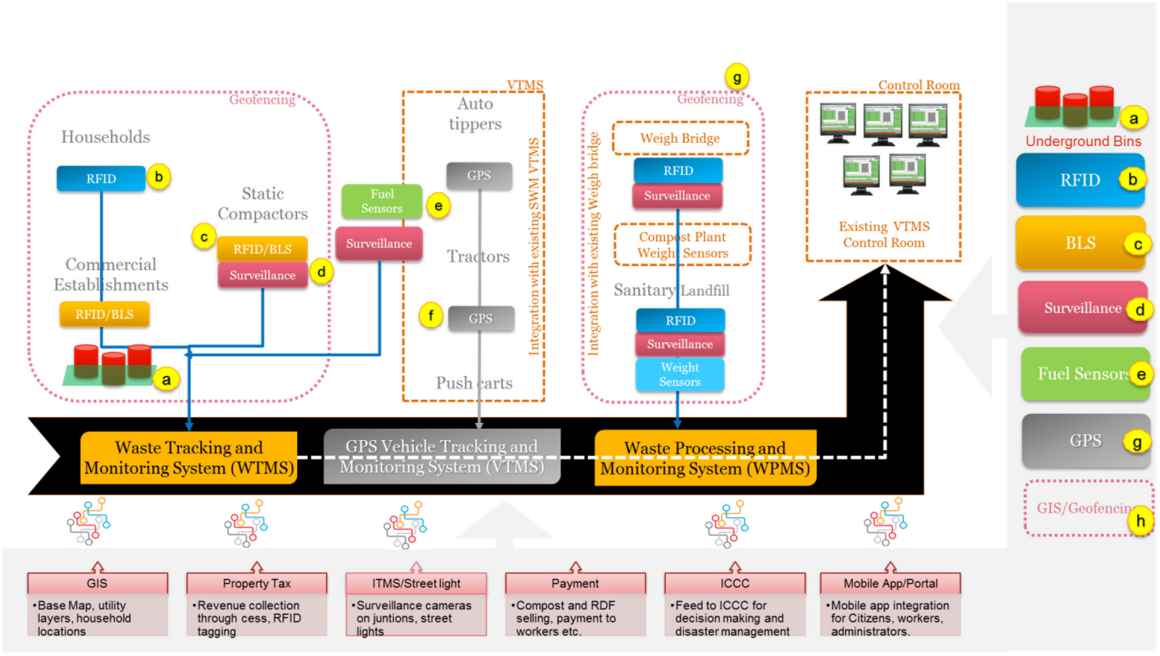


Figure 7 Operational Model

The scope of work for the selected SI will include supply, installation and implementation of Web based tracking and monitoring system with RFIDs, camera based surveillance combined with integration of existing systems with HDMC. Along with that, it will also include the post

implementation support and maintenance of RFIDs, camera surveillance, Tracking and Monitoring solution.

End-to-End Solution to implement and to provide Support Services & Maintenance.

1. Implementation of "Door to Door Collection Monitoring System"
    a. Supply and installation RFID tags on each households and handheld RFID readers.
    b. Design and integrate Door to Door Tracking of waste collection and Monitoring System
2. Design and Integrate "Bin Monitoring System"
3. Integration with Vehicle Tracking Monitoring System (data feed access would be provided by HDMC)
4. Integrating data feed from MSW processing plant at both location (Hubballi and Dharwad). (data feed access would be provided by HDMC)
5. Sizing of Hardware, software and network devices required in the data Centers for using the Integrated SWM.
6. Design, Development, Supply, and Deployment & Implementation of Web Based Application software integrated with GPS, RFID devices, weighbridge application, Existing VTMS, MSW processing site operation and Call Centre Management and complaint management modules.
7. Maintenance of RFID and after warranty period including the replacement of devices in cases of damage, new vehicle or any other change.
8. Maintenance of web based application for Integrated SWM., during and after warranty period.
9. Provide resources for support, maintain and administering the system.
10. Provide training to HDMC resources for operating the tracking system.
11. Integration of ISWM with ICCC

4.13.2 Components of the proposed architecture

Details and role of the components of the expected solution architecture will be as follows:

a. RFID

Only Bins and Households of HDMC will be installed with an RFID tag to identify each object associated with the tag. Each tag will contain a unique identification code. This will help in the tracking of the bins individually. The RFID readers will be installed in each vehicle which will read the radio frequency signals of the tags installed on the bins from which the garbage is collected. The information pertaining to the collection of the garbage and the garbage bins being covered will be sent to the tracking device for creating the reports about the bins covered by the garbage collection vehicles giving the identification code of each bin being covered.

b. Information transmission

The information will be collected by the tracking device and this information will be sent to the tower using the GPRS signal for the transmission of the information. The GPRS tower will communicate with the data center using the transfer protocol to transfer the information collected from the various vehicles. The HDMC data center will be equipped with the database server and the application server to collect the data and to produce the reports. The central server will also have digital maps which will allow seeing HDMC user about the location of the vehicles on that map. The HDMC data center will post the information over the internet which will then be visible to the HDMC users through mobiles or computers.

All the information will now be available over the internet and physical checking will be eliminated. The routing can now be given to the drivers using this system and tracking can be done automatically instead of having multiple check points.

4.13.3 Geocoding / surveying of the following components shall be done by the SI

a. Households
b. Garbage Collection points
c. Processing sites
d. Vehicle routes
e. Bin locations
f. Departmental Offices
g. Landfills/Dumping grounds
h. Transfer stations
i. Motor loading chowkies
j. Department workshops
k. Ward offices
l. Others (as per HDMC request)

The accuracy of these locations should be 3 to 5 meters. The SI shall use these locations over

the maps and shall deliver the same to HDMC in formats like ESRI formats or any other standard GIS format. The GIS Platform and the base map layer shall be made available by the MSI (Master System Integrator). The MSI is the bidder identified through a tender process for the set-up of centralized Data Centre at KMDS & Disaster Recovery (DR) on cloud and also provides the Integrated City Operations platform and GIS platform.However the SI shall use other Base Map services till the time GIS Base Map from MSI is completely ready for use. Also the geo-coded locations mapped on the initial base map should be migrated by the SI once the GIS Base Map is available from the MSI. The migration should be completed in not more than 10 days from the day migration commences.

4.13.4 Technical Specifications of SWM Components

RFID Reader Specifications

Parameter	Specification
Protocol	ISO18000-6B ISO18000-6C EPC GEN2
Frequency Range	Standard ISM 902 928MHz or ISM 865 868MHz
Operation Mode	FHSS
RF Power	0~30dBm, software adjustable
Reading Speed	Software Programmable Average Reading per 64Bits <6ms
Reading Mode	Timing or Touch, Software Programmable
Communication Mode with central server	TCP/IP and GPRS
Data Input Port	Trigger input one time
Reading Range	Max 12 m

UHF Passive RFID Tag Specification

Parameter	Specification
Type	ABS
Supported Transponders	ISO18000-6B ISO18000-6C EPC GEN2

Frequency Range	ISM 920~925MHz(china) ISM 902~928MHz (FCC), ISM865~868MHz
Operation Mode	Fixed Frequency or FHSS Software Programmable
Memory capacity	The tag should support ISO18000-6B protocol standard 2K Bits storage capacity, 1728 Bits (216bytes) writable user area; MR6730B metal supports EPC C1 GEN2 (ISO18000-6C), with 96Bits writable EPC Code area, 512Bits writable user area, and 32Bits password area.
Reading Rate	Software Programmable, Average Reading per 64Bits <10ms
Tags material	Metal material
Reading Range	>12 m related to reader and antenna(the farthest distance can reach to more than 15m)
Operation Temp	20°C 80°C

PTZ Camera

NO.	Camera Characteristics	Specification
1.	Requirement Overview	IP Camera should be a high-definition, full-functioned video endpoint with industry-leading image quality and processing power. The camera is capable of resolutions up to 1920 x 1080 at 30 frames per second (fps) while optimizing network usage with either H.264 or MJPEG compression.
2.	Sensor Type	1/3" progressive-scan CMOS with Vandal-Resistant Dome or better
3.	Max Resolution	1920 x 1080 @ 30 FPS or better
4.	Dynamic Range	120 dB or more
5.	Lens/Iris	4.3-129 mm or better
6.	Minimum illumination	● Color mode: 0.3 lux or better ● Black-and-white mode: 0.01 lux with illuminator active or better
7.	Day/Night Operation	Automatic with IR cut Filter
8.	Operating Frequency	Min 50 Hz

9.	High-speed Pan-Tilt functionality	360° endless pan range and a 180° tilt range
10.	Pan, tilt, manual and Preset speed: The speed shall be applicable for Manual, Tour and Preset Mode	0.5° - 350°/s or better
11.	Compression	H.264 Baseline, Main and High Profiles, Motion JPEG
12.	Frame Rate and Bit Rate	25 FPS at all resolutions with Controllable Bit Rate/ Bandwidth and Frame Rate. In CBR Priority to be defined for Video quality or frame rate and the bandwidth upper limit shall not exceed the defined limit
13.	GOP/ GOV	Ability to change the GOP/GOV Length to optimize the bandwidth and storage
14.	Video streams	minimum 4 Streams @ 1920x1080, H264, 25 fps
15.	Day/Night	Automatic, manual, scheduled
16.	Local Storage	MicroSD – min 128 GB
17.	Motion Detection	Yes built in with multiple configurable areas in the video stream
18.	ONVIF	ONVIF
19.	Electronic Shutter	1/33000 s to 2 s or better
20.	Mount	Wall/ Pole Mount
21.	Backlight Compensation	Required
22.	Electronic Image Stabilization	Required
23.	Image Freeze on PTZ	Required
24.	Privacy Masks	minimum 10 configurable 3D zones or better
25.	Preset Positions	minimum 256 or better
26.	Image Flip	Yes Automatic
27.	Guard Tour	minimum 2 Nos
28.	Built In Heater & FAN	required

29.	Audio	Two way
30.	Alarm	Min 2 Alarm Input / Output ports or better
31.	On-screen directional indicator	Required
32.	Compression	The camera shall for its H.264 implementation support scene adaptive bitrate control, in order to lowering bandwidth and storage requirements. The camera shall support automatic dynamic GOP for optimal bitrate utilisation. The camera shall support automatic dynamic ROI to reduce bitrate in un-prioritized regions
33.	Event Triggers	The camera shall be able to send and received trigger directly from any other camera without interface of VMS. Live Stream Accessed, Motion Detection, Shock Detection, Audio Detection, Network, Temperature, Manual Trigger, Virtual Inputs, Alarm Inputs, PTZ: Error, Moving, Preset Reached, Ready, Storage Disruption, Storage Recording, System Ready, User schedule
34.	Event Action	File upload via FTP, SFTP, HTTP and email Notification via email, HTTP and TCP Pre- and post-alarm video buffering, External output activation, PTZ preset, guard tour, Video recording to edge storage, Day/night mode, Overlay text
35.	Pixel counter	Built In
36.	Edge Storage	Built in SD card slot with support up to 128 GB with Class 10 speed
37.	Storage	The Cameras shall have the feature to directly record the videos/ images onto NAS without any Software
38.	Protocols	At least IP, HTTP, HTTPS, SSL/TLS, TCP, ICMP, SNMPv1/v2c/v3 (MIB-II), RTSP, RTP, UDP, IGMP, RTCP, SMTP, FTP, DHCP, UPnP, ARP, DNS, DynDNS, SOCKS, NTP, CIFS/SMB. IPv4 & IPv6 and Bonjour
39.	Text Overlay	Date & time, and a customer-specific text, camera name, graphical image etc
40.	Security	Password protection, IP address filtering, HTTPS encryption, IEEE 802.1Xa network access control, Digest authentication, User access log

41.	Firmware upgrade	The firmware upgrade shall be done though web interface, The firmware shall be available free of cost
42.	Logs	The camera shall provide minimum 200 logs of latest connections, access attempts, users connected, changes in the cameras etc.
43.	Interface	RJ 45, 100 Base TX
44.	Environmental Certification	IK10 and IP67-rated enclosure for outdoor mounting.
45.	Power Requirements	Power over Ethernet Plus (PoE+) IEEE 802.3at Type 2 Class 4, max. 24 W, Typical 9W; 24 V DC max. 30 W 24 V AC, max. 40 VA or better
46.	Operating Temperature & Humidity	-25 to 55°C or better 10–95% RH (condensing) or better
47.	Camera Tamper	The camera should support tamper feature when any of the following events occur and persist for a designated period: • The IP camera view is changed • The IP camera view is blocked • The IP camera view is substantially out of focus
48.	Quality of service (QoS)	Differentiated services code point (DSCP) marking and class of service (CoS) marking
49.	Certifications Safety	UL, CE, FCC
50.	Audio	Full duplex, line in and line out, G.711, G.726

Fuel Sensor Technical Specifications:

Parameter	Value
Level measurement range depending on modification, mm	0 to 2000
Inaccuracy for measuring the level,	% ±1
Baud rate, bits/s	2400 to 115200
Power supply voltage, VDC	7.0... 24.0

Useful current, mA,	maximum 100
Power consumption, W	<1
Ingress protection rating	IP57
Ambient temperature, °C;	from - 20 to +80
Relative humidity at 25 °C, %;	from 30 to 80
Atmospheric pressure, kPa	from 84 to 107
Operating mode	continuous
Overall dimensions, mm, maximum	150×150×(50+Level)
Weight, kg,	maximum 4
Average service lifetime, years,	5
Multi tank monitoring;	2 tanks
Fuel resolution	1024 levels
Universal data communication protocol;	data transmitting by GSM-GPRS network;

4.14 Geographical Information System (GIS)

GIS database creation:

The MSI (Master System Integrator) will create standard data formats in coordination with stakeholder and will provide it to LSI in which the data layers are required to develop city specific GIS application. The MSI will develop the GIS application for city using the data provided.

The LSI is responsible to collect the required data from concerned departments. The LSI is also responsible for data layer creation or mapping of ICT related assets and sensor systems (like locations of streetlight poles, CCTV cameras, utilities, Smart bus shelters, environment sensors). If this requires field survey, it needs to be done by LSI. If such a data is already available with city, it shall facilitate to provide the same to the MSI. The LSI has to regularly update the GIS data as per standard formats given by MSI.

For data creation activity, LSI will use the advanced ArcGIS Desktop 10.5 software (1 No.) with Extensions (3D Analyst, Spatial Analyst, Network Analyst, Data Interoperability) and it is already available with city. Using the above said data, the MSI will develop the GIS application for the city.

The scope of work for the selected LSI (city level) will include utilization of GIS system at HDMC & integrate it with all the necessary components under ICCC.It will also be the scope of selected MSI to develop component specific GIS layers/utilities as & when requested by HDSCL. The MSI will also be

responsible to ensure that the GIS datasets are updated at regular frequency based on nature of datasets to ensure accuracy during the course of the entire project.

The State has procured the ArcGIS Enterprise server to provide a common map layer for information related to all the Smart Cities. The features of the ArcGIS enterprise system are as follows:

- The GIS application is scalable and robust with powerful GIS functionalities & capabilities.
- GIS application is web responsive that enables the user to view the application on different devices (tablets, smartphone, etc.) in such a way that it shall auto fit to any screen resolution.
- Department users can use GIS map viewer application that has readily available map browsing functionalities.

Details of the existing functionalities built in the software are as follows:

- A citizen portal which is a Single Window information portal for all the information related to the smart city
- A Map Visualization module which provides map view and navigation tools to public
- PoI based information module which allows public to access and analyze information in relation to selected Points of Interest like:
    - Education, Community Services, Culture, Health/Family, Sports and Recreation, Security, Emergency, Govt. offices
- Search and Query Module for users to search the map content based on the available attribute information provided in the GIS layers available
- Public Grievance Application module to enable a GIS based web application for public to report Grievances to client
- Social Media Integration Module

GIS Integration: The SI is required to carry out the seamless integration to ensure ease of use of GIS in the Dashboards at ICCC. If this requires field survey, it needs to be done by SI. If such a data is already available with city, it shall facilitate to provide the same. The SI is required to update GIS maps from time to time.

The data for the datasets at the ArcGIS platform is obtained from the following modes:

- Existing GIS dataset already available with the city authorities
- Existing dataset from Mapmyindia
- Data obtained from Smart City Mission projects
- Data to be gathered by the GIS Surveyor

The System Integrator will be required to undertake a detailed assessment for integration of all the Field level ICT interventions proposed with the existing Geographical Information System (GIS) using

ArcGIS Platform. An indicative list of the GIS datasets that are relevant to ICCC operations is given below in the table.

Function/ Department	GIS Dataset	Existing GIS Dataset in the city	Existing Dataset from Map my India	Dataset that would be available through other SCM projects	Dataset that have to be gathered by GIS Surveyor
Solid Waste Management	Garbage secondary collection points and Landfill in city	Dumping Site/Land Fill/Waste Collection pick up points etc.			
	Location of Community Bins				
	Type of fleet vehicle				
	Location of toilets	Public Facilities at Public Spaces			
Public Transport (BRTS)	BRTS Bus Routes on GIS Map	Public Transport Corridors			
	Location of BRTS Bus Stations	Stations/Depots/Service Areas etc.	Bus Stops (Point Feature), Bus Depots (Polygon)		
Traffic and Police	Location of traffic lights				
	Locations of existing surveillance cameras from Traffic and Police				
	Location of police stations		Police Station (Point Feature)		
Electricity / Power	Location of Energy Assets (Sub-stations, Transmission network etc.)	Electricity-Assets	Electric Substation (Point Feature)		
	Location of the Energy Network on GIS map	Electricity network - Lines			
Gardens	Location of Parks/Gardens		Parks/Gardens (Point Feature)		
	Amenities at each Park/Garden				
Housing & Slums	Location of Slums	Slums			
Smart Poles	Location of Smart Poles				
	Features on each Smart Pole				

Function/ Department	GIS Dataset	Existing GIS Dataset in the city	Existing Dataset from Map my India	Dataset that would be available through other SCM projects	Dataset that have to be gathered by GIS Surveyor
Smart Parking	Location and number of Parking Slots		Parking (Point Feature) Parking Lots		
Street Lights	Location of Street Lights				
Property Taxes (HDMC-Revenue)	Properties on GIS map				
E-Governance	Population by each ward	Building Footprints			
	Location of important Government buildings		Government Offices (Point Feature)		
	Location of Tourist Attractions	Heritage Sites	Tourist Spots (Point Feature), Heritage (Point Feature), ASI Protected Monuments (Point Feature)		
	Location of HD One centers				
	Location of Public Advertisement Boards				
Disaster Management	Location of highest Disaster Impact Areas in the city (Geo-fence)				
Emergency Management	Location of Fire Hydrants				
	Location of fire stations		Fire Station (Point Feature)		
	Amenities at the each Fire Station				
	Location of Health centers/Hospital		Medical (Point Feature)		
	Amenities at each Health Centre/Hospital				
	Type of fleet vehicle				
Water	Location of Water Assets	Water Supply Network - Assets	Pumping Stations –UGD, Water Treatment Plant (Point Feature), Reservoir/OHT		

Function/ Department	GIS Dataset	Existing GIS Dataset in the city	Existing Dataset from Map my India	Dataset that would be available through other SCM projects	Dataset that have to be gathered by GIS Surveyor
			S		
	Location of Water Network on GIS map	Water Supply Network - Lines			
Sewerage	Location of Sewerage Assets (STPs, ETPs etc)	Sewerage System Network	Sewerage Treatment Plant (Point Feature)		
Storm Water	Location of Storm Water drains	Storm Water Infrastructure			

4.15 Other ICT Components

Surveillance cameras for the following ABD projects need to be installed/commissioned and maintained by the bidder for the following projects:

ICT Components in the projects	Qty
Junction Improvement	17
Nehru Stadium	10
Tolankere Lakefront Development	15
MG Park	12

4.16 Other Expectations for LSI

1. LSI shall engage early in active consultations with the Authority, City departments and other key stakeholders to establish a clear and comprehensive project plan in line with the priorities of all project stakeholders and the project objectives.
2. LSI shall assess existing infrastructure's current ability to support the entire solution and integrate the same with the proposed solution wherever applicable and possible
3. LSI shall judiciously evaluate the resources and time planned for undertaking the current state assessment, given the overall timelines and milestones of the project.

4. LSI shall be responsible for supply of all the Products/equipment such as optical fibre cable, Network, Hardware, Software, Devices, etc. as indicated (but not limited to) in the tentative Bill of Materials included in the RFP and their appropriate quantity & capacity.
5. LSI shall be responsible for supply of passive components indicated in the Bill of Materials section of the RFP viz. Housings, Fibre Patch Cords, Racks etc.
6. Validate / Assess the re-use of the existing infrastructure if any with Authority site
7. Supply, Installation, and Commissioning of entire solution at all the locations.
8. LSI shall provide the bandwidth required for operationalizing each smart city initiative. The bandwidth requirement shall be analyzed and procured by the SI at its own cost / risk.
9. LSI shall Install and commission connectivity across all designated locations.
10. LSI shall ensure high availability, reliability and redundancy of the network elements to meet the Service Level requirements.
11. LSI shall be responsible for up gradation, enhancement and provisioning additional supplies of network (including active / passive components), hardware, software, etc. as requisitioned by Authority.
12. LSI shall ensure that the infrastructure provided under the project shall not have an end of life within 24 months from the date of bidding
13. LSI shall ensure that the end of support is not reached during the concurrency of the contract and 5 years thereafter.
14. LSI shall ensure compliance to all mandatory government regulations as amended from time to time.
15. The LSI shall ensure that all the peripherals, accessories, sub-components required for the functionality and completeness of the solution, including but not limited to devices, equipment, accessories, patch cords (fibre), cables, software, licenses, tools, etc. are provided according to the requirements of the solution.
16. Authority shall not be responsible if the LSI has not provisioned some components, sub-components, assemblies, sub-assemblies as part of Bill of Materials in the RFP. The LSI shall have to provision these & other similar things to meet the solution requirements at no additional cost and time implications to Authority.

17. All the software licenses that the LSI proposes shall be perpetual software licenses along with maintenance, upgrades and updates for the currency of the contract. The software licenses shall not be restricted based on location and Authority shall have the flexibility to use the software licenses for other requirements if required.

18. LSI shall ensure there is a 24x7 comprehensive onsite support for duration of the contract for respective components to meet SLA requirement. The LSI shall ensure that all the OEMs have an understanding of the service levels required by Authority. LSI is required to provide the necessary MAF (Manufacturer Authorization Form) as per the format provided in the RFP in support of OEMs active support in the project

19. Considering the criticality of the infrastructure, LSI is expected to design the solution considering the RFP requirement of no single point of failure with high level of redundancy and resilience to meet the network uptime requirements.

20. LSI shall be responsible for periodic updates & upgrades of all equipment, cabling and connectivity provided at all locations during the contract period.

21. LSI shall be responsible for including provisioning for network, power, rack, etc. at all the locations.

22. LSI is expected to provide following services, including but not limited to:

    I. Provisioning hardware and network components of the solution, in line with the proposed authority's requirements

    II. Size and propose for network devices (like Router, switches, security equipment including firewalls, IPS / IDS, routers, etc. as per the location requirements with the required components/modules, considering redundancy and load balancing in line with RFP.

    III. Size and provision the WAN bandwidth requirements across all locations considering the application performance, data transfer and other requirements for smart city initiatives.

    IV. Size and provision the internet connectivity for Service Provider network and Network Backbone.

    V. Liaise with service providers for commissioning and maintenance of the links.

23. LSI shall directly interact with electricity boards for provision of mains power supply at all desired locations for any Field Infrastructure solution. The Hubballi-Dharwad Smart City shall facilitate, if any documentation is required from its side. SI shall be responsible for provisioning

of requisite electricity power and its recurring charges (during operational phase). SI may provision the same under appropriate heads in the commercial bid.

24. Prior to starting the site clearance, the SI shall carry out survey of field locations as specified in Annexure- I (List of Locations), for buildings, structures, fences, trees, existing installations, etc. The Hubballi-Dharwad Smart City shall be fully informed of the results of the survey and the amount and extent of the demolition and site clearance shall then be agreed with the HDSCL.

25. After signing of contract, the Systems Integrator (LSI) needs to deploy the team proposed for the project and ensure that a Project Inception Report is submitted to Hubballi-Dharwad Smart City Limited which should cover following aspects:

    I. Names of the Project Team members, their roles & responsibilities

    II. Approach & methodology to be adopted to implement the Project (which should be in line with what has been proposed during bidding stage, but may have value additions / learning in the interest of the project).

    III. Responsibility matrix for all stakeholders

    IV. Risks the SI anticipates and the plans they have towards their mitigation.

    V. Detailed project plan, specifying dependencies between various project activities/ sub activities and their timelines.

26. System Integrator should provide as part of feasibility report the detailed To-Be designs (Junction layout plans) specifying the following:

    I. High Level Design

        - Application Architecture documents
        - ER Diagrams and other data modelling documents
        - Logical and Physical database design

    II. Data Dictionary and data definitions

    III. Application component design including component deployment views, control flows, etc.

    IV. Field equipment deployment architecture

    V. Low Level Design (including but not limited to)

- Application flows and logic including pseudo code o GUI design (screen design, navigation, etc.)
- Database architecture, including defining data structure, data dictionary as per standards laid-down by Government of India/ Government of Karnataka
- Location of all field systems and components proposed at the junctions/other locations,
- Height and foundation of Poles, cantilevers, gantry and other mounting structures for other field devices
- Location of Junction Box
- Location of PoP
- Electrical power provisioning

27. Any functionality not expressly stated in this document but required to meet the needs of the organization to ensure successful operations of the system shall essentially be under the scope of the LSI and for that no extra charges shall be admissible.

4.17 Common Components

The bidder should estimate and provide estimated cost of extra service integration in terms of man month rate (Rate Card). The Rate card will be valid for 5 (five) years. This rate card will be for extra work only and it should not be the part of commercial bid.

4.17.1 City Network

There is no optical fibre network readily available for connecting all the solutions and ICCC in Hubballi-Dharwad.

4.17.1.1 Scope of Work

1. SI should tie up with an Internet Service Provider or Telecom Service Provider to provide connectivity from the Field Infrastructure to ICCC.
2. SI should use public internet for transmission of information between fields infrastructures to the core router of ICCCrequired. Security applications should be factored in to avoid hacks at field infrastructure level.
3. For various ICT solutions to be implemented, the LSI has to provide edge devices, network connectivity (Sensor to Data Centre) and application software and other required components (except data center part).

4. Connectivity from City ICCC to KMDS data center, will be provided by KSWAN (10 MBPS).
5. Internet connectivity at City ICCC and KMDS will also be provided by KSWAN with 4 MBPS uplink and 4 MBPS downlink.
6. SI should estimate the bandwidth requirement for connectivity between ICCC and Data Center and the same shall be clearly provisioned in the technical proposal with detailed calculations. The connectivity between ICCC and Datacenter shall be through Karnataka State Wide Area Network (KSWAN). The bandwidth provisioned needs to adhere to the following minimum benchmark requirements:
    I. Latency should be less than 40 ms
    II. Jitter should be less than 10% of one-way latency
    III. Packet loss should be less than 0.5%
7. The SI shall meet the parameters of video feed quality, security & performance. SI should factor the same while designing the solution.

4.17.1.2 Technical Specifications:

ICT Solution	Field Level Devices	Connectivity	Data Time Collection
ICT based SWM	1) GPRS/GSM Devices 2) GPRS – Attendance Management System 3) Weigh Bridge Sensors	GPRS Public Internet	Real Time
Intelligent Transport system	1) GPRS/GSM 2) VMS at Bus Stops	GPRS	15-20 Seconds
Smart Poles	1) Environmental Sensors 2) VMS 3) PAS 4) Digital Billboards 5) CCTV Camera	Public Internet	Continuous
Intelligent Traffic Management System	1) Traffic Signals 2) Vehicle Detections Sensors 3) VMS 4) PAS	Public Internet	Continuous
SCADA (Water and Electric)	SCADA Sensors	RFID / GSM	Once in every 6 Hours

4.17.1.3 Security Requirements for Network as a Service:

1. Every field device should be authenticated in the IoT Platform before being able to access to the network resources

    I. Field device should use X.059 certificate based authentication

    II. Certificate Authority chosen should be mutually agreed upon

    III. Along with X.509 certification, Device should also support authentication

4.17.2 Integrated Command and Control Center (ICCC)

4.17.2.1 Overview

Integrated Command and Control Centre's main objective is to break silos between departments and in departments, make process integrated to serve public in an efficient manner. As part of Smart City Hubballi-Dharwad –it is proposed to build one common operation center. This center will provide an integrated view of all ICT projects identified in this document, its primary focus is to serve as a decision support engine for city administrators in day to day operations or during emergency situations.

This City ICCC or city operation center, shall leverage information provided by various departments and provide a comprehensive response mechanism to the day-to-day challenges across the city. City ICCC shall be fully integrated, web-based solution that provides seamless incident – response management, collaboration and geo-spatial display. Various ICT projects shall be able to use the data and intelligence gathered from operations of other elements so that civic services are delivered more efficiently and in an informed fashion.

LSI shall develop ICT solution application module for the smooth operation of City ICCC, and shall deploy support and maintenance manpower at the City ICCC.

4.17.2.2 Scope of Work

1. HDSCL has already identified a location to host city operation center or city ICCC, LSI should inspect the location and factor in the amount of work needed to build ICCC in the bid document
2. LSI should provide a universal dashboard to view all applications in a consolidated manner onGIS map provided by HDSCL and also general KPI View.
3. LSI should be able to provide Unified view for each Departments on GIS map provided by HDSCL and general KPI views.
4. LSIshould be able to project this information on the video wall

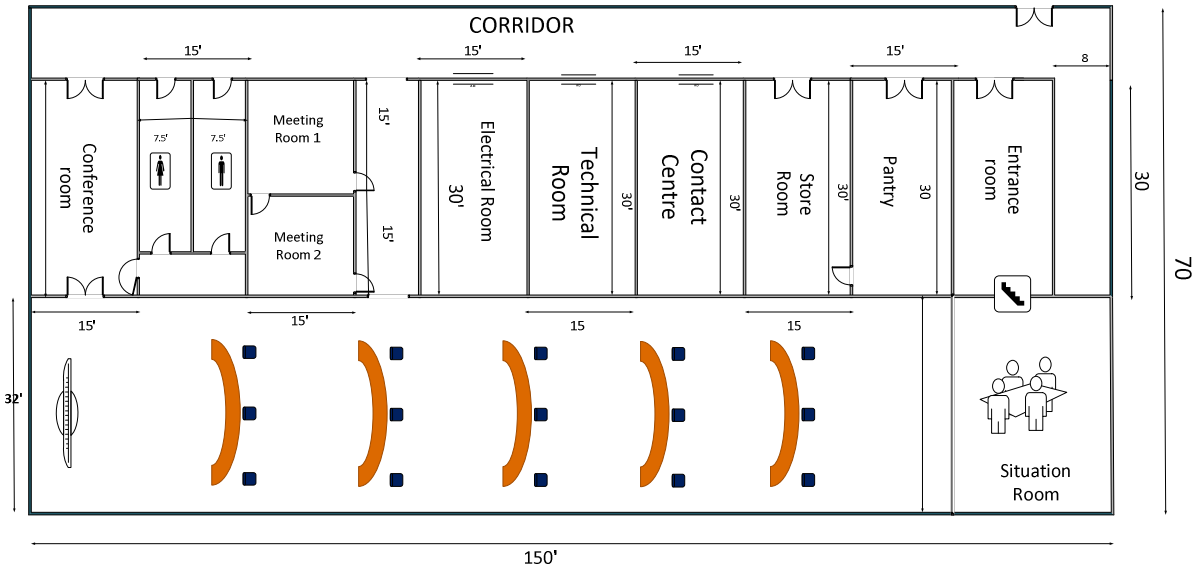
5. KPI's which need to be tracked and project on the video wall shall be during inception stage
6. Key KPI for each domain needs to be tracked based on HDSCL's requirement, which willbe decided post award of work by the HDSCL's.
7. KPI's list should be given in the proposal, this would be indicative and a detailed list of KPI's need to be furnished by SI during feasibility study.
8. KPI's should include from the following categories
    I. Process KPI
    II. KPI's which measure the efficiency of the integrated processes
    III. Event Based KPI
9. System should be capable of creating new KPI's on the fly.
10. LSI should setup a dedicated helpdesk to support the field infrastructure laid out as part of the RFP.

4.17.2.3 Indicative Layout of ICCC

The ICCC Facility is planned to be implemented in a new facility that will be constructed at Court Circle, Hubballi. This new building (currently called the Iconic Building) will have a dedicated space for housing the ICCC facility. The approach to the ICCC Facility will be based on the following basic tenets:

- Spacing should be provided for teams from different departments
- Design of the City ICCC should be as per the ISO 11064 standards

Below is an indicative layout of the ICCC at Iconic Building:



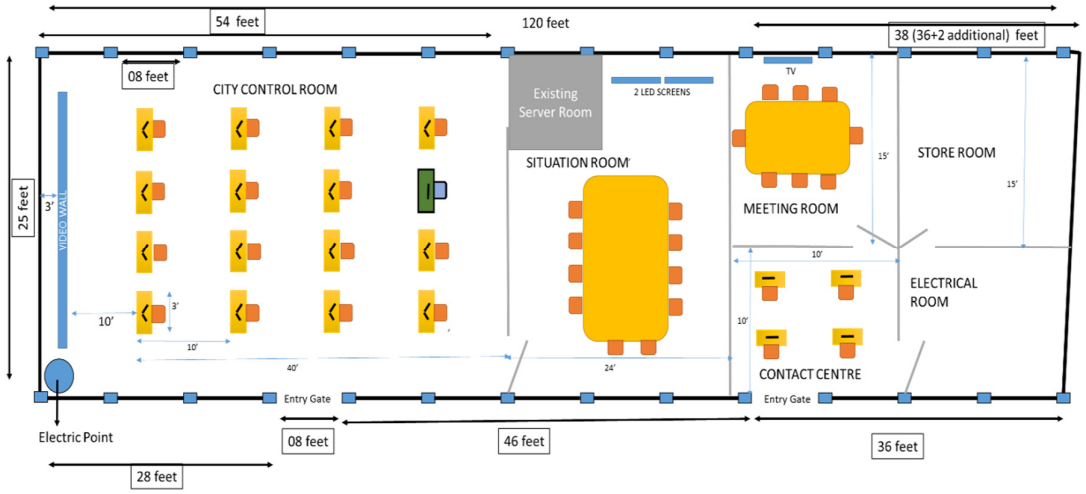
Note: MAP not to scale

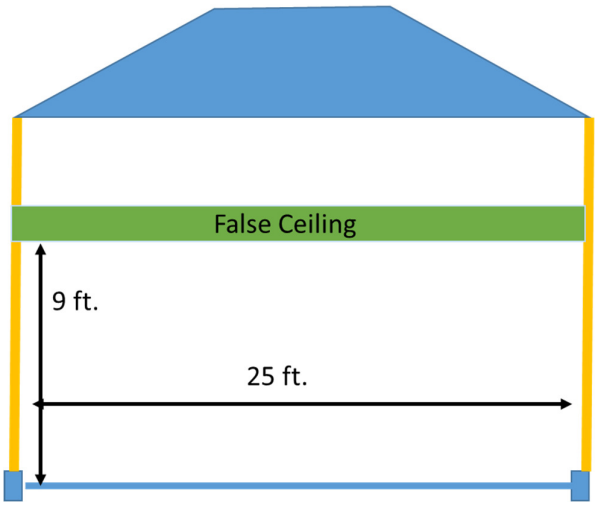
The following table illustrates the floor area that is being considered in the ICCC facility:

Component	Area (Sq.ft.)
City control room	4800
Meeting room (1 or 2)	500
Contact center room	500
Technical support room	750
War room separated with glass glazing from City control room	300
Electrcial room	700
Store room	700
Washrooms	300
Pantry	300
Entrance for telecom component (Fibre cabling etc)	500
Conference room	300
Total Area	**9650**
Room Height	**8 m**

Considering that Iconic building construction will take time, HDSCL has identified a location in the HDMC campus where the ICCC facility will be hosted temporarily. The LSI will be expected to establish the ICCC facility here initially and once the Iconic Building is ready, the same will have to be migrated seamlessly to the new campus.

This temporary facility will house the essential components and will be having the following indicative layout.





It must be noted that the LSI will be responsible for the ICT components for ICCC only (at both the facilities) while the non-ICT components will be facilitated through a different vendor.

The following location pictures show the existing building which will be refurbished for hosting the temporary ICCC facility.

4.17.2.4 ICCC Platform- Functional Specifications

The ICCC platform will be provided by MSI (KUIDFC). The Proposed Integrated Command and Control Center Platform (ICCCP) shall have IoT Platform Software (Data Normalization software) &ICCC Software functionalities;All applications which will have field infrastructure like – Smart Water, Smart Transport, Smart Traffic, Solid waste management etc., proposed to be built as part of Smart City initiative shall pass information processing via IoT Platform.

IoT Layer must integrate lots of Services in the current scenario and must deliver an architecture which will be future scalable and can accommodate more Services / Utility Solution Integration.IoT shall be a Common layer and is required for the Normalization of the data from different edge applications. This layer will aggregate and integrate utilities & sensors data so as to ensure that Device management, Analytics, Reporting, Dash Boarding and Integration of the Different Authorities data can be performed from a single operational screen. This layer shall also integrate with different Independent Software Vendor (ISV) applications hosted at Data Centre or at Cloud to provide the completeness of the solution.

4.17.2.5 Technical Specifications:

Technical Specifications for IT Infrastructure

- Central Level Data Centre: KUIDFC shall provide the location to house the compute and storage infrastructure, at the Karnataka Municipal Data Society, Bangalore. Data center will be established by state vendor based on the compute and storage requirement given by each city.
- City Operation Centre (City Level): The LSI (City vendor) needs to provision for necessary IT infrastructure including Storage for Video feeds (only for ICT-SWM solution) at city level.
- Various ICT equipment to be provisioned and maintained by the LSI at the City Operation Center Site is given below.

4.17.2.5.1 Video Wall

Sl No.	Item	Specifications
1.	Display Wall Screen Size	70"
2.	Projection Technology	DLP Rear Projection
3.	Native Resolution per cube	1920x1080
4.	Aspect Ratio	16:9
5.	Light Source	LED
6.	Brightness	on screen brightness Minimum 300 cd/m2
7.	Brightness Uniformity	95%
8.	Contrast ratio	Typical 1600:1
9.	Connectivity	The screen should have front accessibility and adjustable low inter screen gap < 1 mm to give seamless viewing experience.
10.	Full viewing angle	180°
11.	Lifetime	Normal mode: 60 000h
12.		Eco mode: 80 000h
13.	Inputs	DVI-D
14.	Power	100 - 240 VAC, 60 - 50Hz, (below values are for 230V; 110V +5%)
Operating conditions		
15.	Humidity 5)	Up to 80% non-condensing
16.	Temperature	10°C-40°C | 50°F-105°F
Storing conditions		
17.	Temperature	0°C-40°C | 32°F-105°F
18.	Remote management through IP	Remote management through IP for parameter adjustment. Each cube should have built-in web server
19.	Access	Front Only

4.17.2.5.2 Video Wall Controller

Sl.NO	Item	Specifications
1.	Display controller	Controller to be able to control minimum 10 cubes
2.	Redundant Controller	The controller should be based on the latest architecture.
3.	Platform	Windows 10 Pro or Linux

4.	Processor	Latest x86 Processor (64 bit) Multi core processor, 3 GHz
5.	RAM	32 GB
6.	HDD	1 TB (7200 rpm)
7.	Chassis Type	19" Rack mount industrial chassis
8.	Network	2 Network Ports
9.	Resolution Support For Outputs	Minimum 1920 x 1080 or higher
10.	Scalability	The system should be able to add additional inputs as required in the future
11.	Control	The system should have the capabilities of interacting (Monitoring & Control) with various applications on different network through the single Operator Workstation. It shall be possible to launch layouts, change layouts in real time using Tablet
12.	Redundancy	Redundant Hot Swappable HDD in RAID 1 Configuration
13.	Redundancy	Redundant Hot Swappable Power Supply
14.	Keyboard & Mouse Extension	Keyboard and Mouse along with mechanism to extend them to 20 Mtrs. operator desk from display controller to be provided
15.	24 x 7 operation	The controller shall be designed for 24 x 7 operation
16.	Others	The Video Wall and the Controller should be of the same make to ensure better performance and compatibility
17.	OEM Certification	All features and functionality should be certified by the OEM. The Display Modules, Display Controller & Software should be from a single OEM.

4.17.2.5.3 Display Wall Management Software

Sl. No.	Item	Specifications
1.	Layouts	The software should be able to pre configure various display layouts and access them at any time with a simple mouse click or schedule/timer based.
2.	Sources	The software should be able display multiple sources anywhere on video wall in any size.
3.	Remote Viewing	The video wall content will be able to show live on any remote display Mobile with IE
4.	User management	Key features of Video Wall management Software
		• Central configuration database
		• Browser based user interface
		• Auto-detection of network sources
		• Online configuration of sources, displays and system

		variables
5.	Software features	Video Wall Control Software shall allow commands on wall level or cube level or a selection of cubes :
		• Switching the entire display wall on or off.
		• Setting all projection modules to a common brightness target, which can be either static (fixed) or dynamic to always achieve maximum (or minimum) common brightness between projection modules.
		• Fine-tune color of each cube
6.	Client & Server based Architecture	Should support Multiple clients / Consoles to control the Wall layouts
7.	Collaboration	The Software should be able to share layouts comprising of multiple sources with workstations / Displays over LAN for remote monitoring
8.	Scaling	Software should enable the user to display multiple sources (both local & remote) up to any size and anywhere on the display walls (both local & remote).
9.	Display	The software should be able to create layouts and launch them as and when desired
10.	Remote Control	The Display Wall and sources (both local & remote) should be controlled from Remote PC through LAN without the use of KVM Hardware.
11.	Support of Meta Data	Software should support display of Alarms
12.	Authentication	The software should provide at least 2 layer of authentication
13.	Scenarios	Software should able to Save and Load desktop layouts from Local or remote machines
14.	Layouts Configuration	Can be pre-configured or changed in real time.
15.	Sharing & Collaboration	It should be possible to share the layouts over LAN/WAN Network with Display in Meeting room or on Remote Workstations connected on LAN/WAN Network.
16.	OEM Certification	All features and functionality should be certified by the OEM.

		The Display Modules, Display Controller & Software should be from a single OEM.

4.17.2.5.4 Monitoring Workstations (High End PC)

S.No.	PARAMETER	Details
1	Processor	Latest X86 64-bit based Multi core processor (3GHz) or better
2	Chipset	Latest series 64bit Chipset
3	Motherboard	OEM Mother board logo embossed
4	Memory	16 GB DDR4 2400 Mhz DDR4 Memory with 4 DIMM Slot expandable utpo 64 GB
5	Hard Disk Drive	2 TB SATA 6.0-Gb/s Hard Drive 7200 RPM, with Flash Cache of 64GB SSD. Provision for installing 4 more drives
6	Optical Drive	Super Multi DVD Writer
7	Graphics	Integrated HD Graphics or higher
8	Audio	High Definition Audio (all ports should be stereo)
9	Ethernet	Integrated Gigabit (10/100/1000 NIC) RJ- 45 Ethernet controller with PXE & Wake On LAN support
10	Slots	2 PCI/PCIe slots, one should be X16
11	Ports	6 nos. - USB3.0 ports, 4 nos. - USB2.0 ports (with at least 4 on the front side) or more
		USB keyboard and mouse ports
		1 nos - RJ45 network connector
		1 nos Displayport
		Rear Line In/Line Out jacks Front 3.5 mm head phone output and microphone in jack
12	PTZ joystick controller (with 2 of the workstations in SCOC)	• PTZ speed dome control for IP cameras • Minimum 10 programmable buttons • Multi-camera operations • Compatible with all the camera models offered in the solution • Compatible with VMS /Monitoring software offered
13	Monitor	Two monitors of 22” TFT LED monitor, Minimum 1920 x1080

		resolution, 5 ms or better response time, TCO 05 (or higher) certified
14	Keyboard	104 Keys USB Keyboard (same make as PC)
15	Mouse	2 Button USB Optical Mouse (same make as PC)
16	Security	TPM 2.0 Security, BIOS controlled electro-mechanical internal chassis lock for the system. Power-On password (via BIOS), Administrator password (via BIOS), Setup password (via BIOS)
17	Operating System	64 bit pre-loaded OS with recovery disc
18	Compliance and Certification	ROHS and Windows, All Linux platform. Certification Energy Star version/ BEE star, EPEAT Qualified, UL FCC
19	System Volume	System Volume must be less than 8 liters.
20	Antivirus	Advanced antivirus, antispyware, desktop firewall, intrusion prevention (comprising of a single, deployable agent) which can be managed by a central server. (Support, updates, patches and errata for the entire contract/ project period)
21	Power Supply	SMPS; Minimum 400-watt Continuous Power Supply with Full ranging input and APFC. Power supply should be 90% efficient with EPEAT Gold certification for the system.

4.17.2.5.5 Television

Sl. No	Parameters	Specifications
1	Technology	LCD –LED Back Lit
2	Size in inches	55”
3	Native Resolutions	1920x1080
4	Brightness	400 Nits or high
5	Viewing angle	178° x 178° or more
6	Minimum Input Ports	• 1-USB with Auto Playback, • 3-HDMI, • 1-VGA • 1-Rs232 • 1-RJ45 • 1- CVBS/Component-1

7	Smart Features	Built in Wi-Fi & Miracast/Screen Sharing ,SNMP support, Wake on LAN,Built in SOC
8	Audio (Capacity of Speaker)	Minimum 10 Watts x 2 or more speakers
9	Power Consumption	100 Watts (Max)
10	Power Type	Built-in Power
11	Energy Saving Feature	Yes
12	Certification	• Latest Energy Star Certification, • UL,FCC
14	Box Should Contain	LED Display unit, Table Top Stand and Other Required Cables (Remote Control, Power Cable)
15	Wall Mount installation	Required

4.17.2.5.6 Software for Videoconferencing

Sl. No	Parameter	Specifications
1	Native Applications	Should support Windows, macOS, Linux, Android, iOS, watchOS and WebRTC.
2	Video Codecs	Should support Native: VP8 SVC. Via build-in gateway: H.264 AVC, H.263,
		Should support Video streams resolution, compression ratio and frame rate are chosen dynamically and independently for every participant in a conference based on the selected layout, bandwidth, connection quality, endpoint's performance and its hardware capabilities.
3	Layouts	Should support this Various layouts for video and content on single or multiple screens chosen interactively by users.
4	Video Resolution	Should support Native for 1-on-1 video calls: 2160p30, 1080p, 720p30, 480p, 360p, 180p.
		Should support Native for multipoint conferences: 720p30, 480p, 360p, 180p per stream.
		Via built-in gateway with SVC: server outputs 9 layers with resolution up to 720p30 per conference.
5	Content Resolution	Should support Content sharing: identical to source up to 1080p. Slideshow up to 1280x1024.
6	Audio Codec	Should support Opus Wideband HD Audio, Speex, iSAC, G7xx.
7	Protocols	Should support TCP-based protocol, WebRTC, SIP, H.323, BFCP, H.239, and

		RTSP.
8	Encryption	Should support AES-256, TLS. Via WebRTC: SRTP DTLS.
9	Team Meeting	Use Symmetric Conference: Each participant sees all other participant's videos on screen
10	Board Meeting	Use Role-based Conference: Up to 6 speaker videos at a time, Videos of speakers seen by all other participants.
11	Training & Lectures	Use Asymmetric Conference: 1 speaker's Video to all receiving participants, speaker sees all, participants do not see each other
12	Privacy and security	Server works in Private Network, in LAN/WAN/VPN, even without Internet connection
13	General Features	Screen Sharing (Desktop + Application Sharing), Private & Secure Chat, File Transfer, Scheduling of Conferences ,
		Mobile users can start/join conference , Any User can start Group or Point2Point conference

4.17.2.5.7 Office Desktop

Product Details	Specifications
Form Factor	Desktop
No. of Processors	1
No of Cores	4 or higher
Processor Configuration	Latest X86 64-bit based Multi core processor (Released in 2017)
Resolution	1920 x 1080 or higher
Chipset	Compatible with processor
RAM Type	DDR4
RAM Size	min 16 GB
Type of Hard Disk Drive	SATA
No. of Hard Disk Drives	Min 1
No. of DIMM Slots	Min 1
No. of PCIe Slots Gen 3.0 (x 1)	Min 1
No. of PCIe Slots Gen 3.0 (x 16)	Min 1
Operating System	Windows 10 or higher
Networking Interface	Integrated Gigabit 10/100/1000

Wi-Fi Connectivity	Yes
VGA Port	Available
HDMI Port	Available
Display Port	Available
RJ45	Available
No. of USB 2.0 Port	Min 2
No. of USB 3.0 Port	Min 2
Optical Drive	1
Display (antiglare, LED-backlit)	Integrated
Display Type	Normal
Display Size	21.5 or higher
Display Resolution (Full HD or better)	1366X768 or better
Keyboard	Standard Keyboard
Mouse	Optical Scroll Mouse
Safety Certifications	IEC:60950-1 / IS:13252 EPEAT Gold Energy Star / BEE 5 Star
Security	Integrated panel lock, Power-On password (via BIOS), Administrator password (via BIOS), Setup password (via BIOS), TPM 2.0
Hard Disk Drive Size	1024 GB
Availability of Bundled Software	System Health monitoring Tool with H/W box
ROHS Compliance	Yes
TCO Compliance (for Monitors)	TCO-06

4.17.2.5.8 IP PABX

Sl. No.	IPPBX Specifications
1.	Extensions - unlimited support
2.	Number of Simultaneous Calls Supported - upto 1024
3.	Call Logging
4.	Call Reporting
5.	Call Forward on Busy or No Answer
6.	Call Routing by DID
7.	Auto Attendant / Digital Receptionist

8.	Voicemail/ Music on Hold
9.	Central Phonebook
10.	Call by Name
11.	Call Parking / Pickup
12.	Call Transfer
13.	Call Queuing
14.	Call Recording
15.	MWI – Message Waiting Indicator
16.	Supports Popular SIP Phones
17.	Supports SIP Trunks / Gateways
18.	Intercom/ Paging
19.	Ring Extension & Mobile Simultaneously
20.	Extensive Codec Support (G711, G722, GSM, Speex, ILBC, G729)
21.	Automatic Pickup on Busy
22.	Call Recordings Management
	Management and Scalability
23.	Web-based Management Console
24.	Automated Provisioning of Devices
25.	Real Time Web-based System Status
26.	Integrated Web Server
27.	Easy Backup and Restore
28.	SBC to Configure Remote Extensions
29.	VMware / Hyper-V Compatibility
30.	Scheduled Backup
31.	Scheduled Restore
32.	Inbuilt Fail Over Functionality
	Unified Communications
33.	Setting Up Conference Calls
34.	See the Presence of Your Colleagues
35.	Receive Voice Mail via Email
36.	Receive Faxes via Email as PDF
37.	Integrated Fax Server
38.	Integrate Offices

39.	Advanced Forwarding Rules
	Mobility
40.	Android Client
41.	iOS Client
42.	Windows Phone Client
43.	CTI Support
44.	Seamlessly Create Conference Calls
45.	Users can Configure their Own Extension
46.	Provisioning by Email
	IP Phone Management
47.	Automatic Plug & Play Phone Provisioning
48.	Manage IP Phones Network Wide from Console
49.	Restart Phones Remotely
50.	Update & Manage Firmware Network Wide
	Gateway- Key Features
51.	Flexible SIP and Protocols configuration enable services providers and enterprises to seamlessly connect in hybrid networks
52.	Routing Features: Call routing and translation (from PCM to IP or reversely)
53.	Coder support: G.711A,G.711U, G.729 A/B,G723,G722, GSM, iLBC, RFC 2833,RF 3261,SIPINFO,INBOUND
54.	IP protocols: TCP/UDP, HTTP, ARP/RARP, DNS, NTP, TFTP, TELNET, STUN and more IP protocols
55.	Interworking/Digit transmission: T.38 real-time fax, T.38 – G.711 interworking, Digit transmission via RFC 2833 (SIP)
56.	Power Requirements/ Consumption: AC Power Supply Range 100 – 240 VAC, Consumption-15W(Normal Conditions)
57.	IP Interfaces: Dual redundant 2 *100 Base-T Ethernet for VoIP payload and signaling
58.	Signaling Protocols: TDM Signaling Protocols, ISDN PRI, MF R2, SS7 ISUP, SS7 MTP1~3, SS7 SIGTRAN
59.	QoS: Adaptive jitter buffer, Packet loss compensation, Configurable Type of Service (ToS) fields for packet prioritization and routing
60.	Safety: Compliant with international standards
61.	30/60 simultaneous SIP sessions with multimedia transcoding, and 30/60 channels of ISDN signaling

62.	Integrated transcoding support for voice, tone and faxing

4.17.2.5.9 IP phones

Sl. No	Parameter	Specifications
1	Display	4.3" or bigger, 480 x 272-pixel color LED display with backlight, LED indication and status information. Dual color (red, Green)
2	Integral switch	Dual-port Gigabit Ethernet , Power over Ethernet (IEEE 802.3af), class 3
3	Speaker Phone	Yes
4	Headset	Wired, Cushion Padded Dual Ear-Speaker, Noise Cancelling headset with mouthpiece microphone, port compatibility with IP Phone
5	VoIP Protocol	SIP v1 (RFC2543), v2 (RFC3261)
6	POE	IEEE 802.3af or better and AC Power Adapter (Option)
7	Supported Protocols	DHCP, DNS, SNTP, SRTP
8	Codecs	GSM_FR, G.723, G.729AB, G.726-32 iLBC, G.722, G.711(A/μ)
9	Speaker Phone	Full duplex speaker phone with echo cancellation Speaker on/off button, microphone mute
10	Volume Control	Easy decibel level adjustment for speaker phone, handset and ringer
11	Phonebook/Address book	Upto 1000 entries Call history: dialed/received/missed/forwarded
12	Call Logs	Access to missed, received, and placed calls. (Minimum 20 overall)
13	Clock	Time and Date on display - can set automatically or manually
14	Ringer	Ring tone selection/provisioning
15	Directory Access	XML/LDAP remote phonebook
16	QoS	QoS: 802.1p/Q tagging (VLAN), Layer 3 ToS DSCP
17	Network Security	AES encryption for configuration file

4.17.2.5.10 Multifunction Printer

Sl . No	Parameters	Specifications

1	Speed	1000Mbps
2	Ports	48 Gigabit Ports, 4 SFP Ports
3	Type	Layer 2
4	Manageability	Centrally Manageable with required software
5	Architecture	Shall be 1RU, 19" Rack Mountable
		24 RJ-45 autosensing 10/100/1000 ports with 2 SFP Ports
		All ports shall be compliant on Gigabit Copper Ports
		1 RJ-45 (serial RS-232C) or USB micro-B console port.
		Packet buffer size of minimum 1.5 MB to support video/streaming traffic and huge file transfers (like medical scan documents etc)
		Shall have switching capacity for providing non-blocking performance on all Gigabit ports.
6	Resiliency	IEEE 802.1D Spanning Tree Protocol, IEEE 802.1w Rapid Spanning Tree Protocol and IEEE 802.1s Multiple Spanning Tree Protocol
		IEEE 802.3ad Link Aggregation Control Protocol (LACP) up to eight links (ports) per group
		Layer 2 Features
		MAC address table size of 16000 entries
		Shall support up to IEEE 802.1Q and minimum 512 VLANs simultaneously
		Shall support GARP VLAN Registration Protocol or equivalent feature to allow automatic learning and dynamic assignment of VLANs
		Shall support Jumbo frames to improve the performance of large data transfers
		Internet Group Management Protocol (IGMP)
		Multicast Listener Discovery (MLD) snooping
		IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and LLDP-MED (Media Endpoint Discovery)
		IPv6 host and Dual stack (IPv4/IPv6) support to provide transition mechanism from IPv4 to IPv6

7	QoS and Security Features	Access Control Lists for traffic filtering
		Source-port filtering or equivalent feature to allow only specified ports to communicate with each other
		Traffic prioritization based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ
		Shall support traffic classification into eight priority levels mapped to two or four queues using Weighted deficit round robin (WDRR) queuing
		Shall support traffic rate-limiting per port
		IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port
		Media access control (MAC) authentication to provide simple authentication based on a user's MAC address
		Web-based authentication to provide a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant
		Concurrent IEEE 802.1X and Web or MAC authentication schemes per port
		Port security to allow access only to specified MAC addresses
		MAC address lockout to prevent particular configured MAC addresses from connecting to the network
		STP BPDU port protection to prevent forged BPDU attacks
		STP Root Guard to protect the root bridge from malicious attacks or configuration mistake
8	Management Features	Configuration through the CLI, console, Telnet, SSH and browser-based management GUI (SSL)
		SNMPv1, v2, and v3 and Remote monitoring (RMON) support
		sFlow (RFC 3176) or equivalent for traffic analysis
		TFTP and Secure FTP support

		Dual flash images to provide independent primary and secondary operating system files
		Multiple configuration files to allow multiple configuration files to be stored to a flash image
		RADIUS/TACACS+ for switch security access administration
		Simple Network Time Protocol (SNTP) or equivalent support
		Environmental Features
		Shall support IEEE 802.3az Energy-efficient Ethernet (EEE) to reduce power consumption
		Operating temperature of 0°C to 45°C
		Safety and Emission standards including EN 60950; IEC 60950; VCCI Class A; FCC part 15 Class A

4.17.2.5.11 PTZ camera

NO.	Camera Characteristics	Specification
51.	Requirement Overview	IP Camera should be a high-definition, full-functioned video endpoint with industry-leading image quality and processing power. The camera is capable of resolutions up to 1920 x 1080 at 30 frames per second (fps) while optimizing network usage with either H.264 or MJPEG compression.
52.	Sensor Type	1/3” progressive-scan CMOS with Vandal-Resistant Dome or better
53.	Max Resolution	1920 x 1080 @ 30 FPS or better
54.	Dynamic Range	120 dB or more
55.	Lens/Iris	4.3-129 mm or better
56.	Minimum illumination	● Color mode: 0.3 lux or better ● Black-and-white mode: 0.01 lux with illuminator active or better
57.	Day/Night Operation	Automatic with IR cut Filter

58.	Operating Frequency	Min 50 Hz
59.	High-speed Pan-Tilt functionality	360° endless pan range and a 180° tilt range
60.	Pan, tilt, manual and Preset speed: The speed shall be applicable for Manual, Tour and Preset Mode	0.5° - 350°/s or better
61.	Compression	H.264 Baseline, Main and High Profiles, Motion JPEG
62.	Frame Rate and Bit Rate	25 FPS at all resolutions with Controllable Bit Rate/ Bandwidth and Frame Rate. In CBR Priority to be defined for Video quality or frame rate and the bandwidth upper limit shall not exceed the defined limit
63.	GOP/ GOV	Ability to change the GOP/GOV Length to optimize the bandwidth and storage
64.	Video streams	minimum 4 Streams @ 1920x1080, H264, 25 fps
65.	Day/Night	Automatic, manual, scheduled
66.	Local Storage	MicroSD – min 128 GB
67.	Motion Detection	Yes built in with multiple configurable areas in the video stream
68.	ONVIF	ONVIF
69.	Electronic Shutter	1/33000 s to 2 s or better
70.	Mount	Wall/ Pole Mount
71.	Backlight Compensation	Required
72.	Electronic Image Stabilization	Required
73.	Image Freeze on PTZ	Required
74.	Privacy Masks	minimum 10 configurable 3D zones or better
75.	Preset Positions	minimum 256 or better
76.	Image Flip	Yes Automatic

77.	Guard Tour	minimum 2 Nos
78.	Built In Heater & FAN	Required
79.	Audio	Two way
80.	Alarm	Min 2 Alarm Input / Output ports or better
81.	On-screen directional indicator	Required
82.	Compression	The camera shall for its H.264 implementation support scene adaptive bitrate control, in order to lowering bandwidth and storage requirements. The camera shall support automatic dynamic GOP for optimal bitrate utilisation. The camera shall support automatic dynamic ROI to reduce bitrate in un-
83.	Event Triggers	The camera shall be able to send and received trigger directly from any other camera without interface of VMS. Live Stream Accessed, Motion Detection, Shock Detection, Audio Detection, Network, Temperature, Manual Trigger, Virtual Inputs, Alarm Inputs, PTZ: Error, Moving, Preset Reached, Ready, Storage Disruption, Storage
84.	Event Action	File upload via FTP, SFTP, HTTP and email Notification via email, HTTP and TCP Pre- and post-alarm video buffering, External output activation, PTZ preset, guard tour, Video recording to edge
85.	Pixel counter	Built In
86.	Edge Storage	Built in SD card slot with support up to 128 GB with Class 10 speed
87.	Storage	The Cameras shall have the feature to directly record the videos/ images onto NAS without any Software

88.	Protocols	At least IP, HTTP, HTTPS, SSL/TLS, TCP, ICMP, SNMPv1/v2c/v3 (MIB-II), RTSP, RTP, UDP, IGMP, RTCP, SMTP, FTP, DHCP, UPnP, ARP, DNS, DynDNS, SOCKS, NTP, CIFS/SMB. IPv4 & IPv6 and Bonjour
89.	Text Overlay	Date & time, and a customer-specific text, camera name, graphical image etc
90.	Security	Password protection, IP address filtering, HTTPS encryption,IEEE 802.1Xa network access control, Digest authentication, User access log
91.	Firmware upgrade	The firmware upgrade shall be done though web interface, The firmware shall be available free of cost
92.	Logs	The camera shall provide minimum 200 logs of latest connections, access attempts, users connected, changes in the cameras etc.
93.	Interface	RJ 45, 100 Base TX
94.	Environmental Certification	IK10 and IP67-rated enclosure for outdoor mounting.
95.	Power Requirements	Power over Ethernet Plus (PoE+) IEEE 802.3at Type 2 Class 4, max. 24 W, Typical 9W; 24 V DC max. 30 W 24 V AC, max. 40 VA or better
96.	Operating Temperature & Humidity	-25 to 55°C or better 10–95% RH (condensing) or better
97.	Camera Tamper	The camera should support tamper feature when any of the following events occur and persist for a designated period: • The IP camera view is changed • The IP camera view is blocked • The IP camera view is substantially out of focus
98.	Quality of service (QoS)	Differentiated services code point (DSCP) marking and class of service (CoS) marking
99.	Certifications Safety	UL, CE, FCC

100.	Audio	Full duplex, line in and line out, G.711, G.726

4.17.2.5.12 Fixed Camera

Sl.No	Parameter	Minimum Specifications or better
1.	Video Compression	H.264 or better
2.	Video Resolution	1920 X 1080
3.	Frame rate	Min. 25 fps
4.	Image Sensor	1/3" Progressive Scan CCD / CMOS
5.	Lens Type	Varifocal, C/CS Mount, IR Correction
6.	Lens#	Auto IRIS 8 – 40 mm, F1.4
7.	Minimum Illumination	Colour: 0.5 lux, B/W: 0.1 lux (at 30 IRE)
8.	IR Cut Filter	Automatically Removable IR-cut filter
9.	Day/Night Mode	Colour, Mono, Auto
10.	S/N Ratio	≥ 50 dB
11.	Auto adjustment + Remote Control of Image settings	Colour, brightness, sharpness, contrast, white balance, exposure control, backlight compensation, Gain Control
12.	Wide Dynamic Range	On/Off
13.	Audio	Audio Capture Capability
14.	Local storage	Should support MicroSD -min 128 GB
15.	Protocol	HTTP, HTTPS, FTP, RTSP, RTP, TCP, UDP, RTCP, DHCP
16.	Security	Password Protection, IP Address filtering, User Access Log, HTTPS encryption
17.	Operating conditions	0 to 50°C
18.	Casing	NEMA 4X / IP-66 rated
19.	Certification	UL / CE / FCC / EN

4.17.2.5.13 Guidelines for Control Room Design and Setup

#	Parameters	Quantity

1	Wall Size for Video Wall	Video-wall with Single Controller
2	Cube Size	70'' Inch each
3	Workstations	As per BOQ

General Requirements and Specifications for Console System

The following specifications detail the minimum requirements of the Console System. Bidders must respond on the enclosed chart. This allows for a point-by-point technical response stating compliance, taking exception or providing requested information. Bids submitted without this chart will be considered non-responsive.

- Vendor shall supply the following to obtain project level approval
- Copy of ISO 9001:2008 Certification & ISO 14001:2004
- Copy of Green guard certifications for full console.
- Copy of FSC certification (Forest Stewardship Council) for Wood Components. Certificate for compliance towards sustainable forest initiative ensuring wood used is from sustainable forest harvesting.
- The console(s) design shall be proven in service.
- The consoles shall be of modular design, facilitating future equipment retrofits and full reconfigurations without major modification to structure or exterior elements.
- The consoles shall have rigid independent frames.
- Mechanical fasteners shall connect adjacent modules to maintain perfect alignment.
- Depending upon the evolution of needs and technology, the construction shall provide easy and fast removal and installation of all equipment items.
- The console frame shall have the sit stand actuator mechanisms incorporated into the structural frame and these actuator mechanisms will not be free standing on the floor.
- The console frame shall have provisions for leveler legs to be incorporated into the frame. In addition, the frame will be pre-designed to install optional anti-vibration dampers (upon request) or anchoring brackets for applications where vibration is a factor or for applications located in seismic zones.
- The console frame structure shall have fully integrated cable management. The base structure will have a minimum of 2 lateral raceways; the transition from the base to the work surface will have a minimum of 2 vertical raceways; and the work surface will have a lateral raceway location depending on the size of equipment being mounted in the console.

- The cable raceways shall be continuous throughout the entire console layout thus allowing uninterrupted cable management.
- The console design shall be acoustically acceptable and minimize noise reflection.
- Consoles shall be properly finished to prevent glare and reflection.
- No sharp edges shall be present that may lead to injury to the operators.
- The color of the console shall be such that users can work for a long duration without eye strain or other stress.
- The console finish shall be resistant to rubbing and liquids, impact-proof and easy to clean.
- The surface of the work area shall be non-scratch able
- The work surface should be smooth and level and take into consideration all accepted human factor criteria, including view, reach distances, keyboard height and knee well space. The work surface height shall be adjustable.
- Full console sit to stand height adjustment shall be available via an electric actuator. The top section of the console raises both the upper viewable equipment and the work surface together.
- Detailed CAD (PDF format) drawings of console and equipment layouts for coordination of site measurements, architectural, mechanical, and electrical project elements for each console type will be provided.
- All Board Cladding (Laminates) must be 1MM & the Laminate supplier must be Green Guard Certified, Certificates of which must be provided on request.
- Renderings of consoles and room must be provided on request.
- Pre-production review, to include a drawing submittal and component listing complete with samples of selected finish materials must be provided on request.
- Samples of the following material components, which demonstrate workmanship, shall be provided upon request:
    - Work surface sample.
    - Sample panel construction and finish materials.

Modular Control Desk

Bidder should refer the control desk design for any clarification of items.

Structure

a. Console System must be of modular design. The Console design shall address the functional, ergonomic and aesthetic requirements of the particular working environment while

complying with accepted human factor design and ergonomic standards for viewing distance, angle, keyboard height, and knee space requirements.

b. Standard top height of modular control desk shall be 750 mm in sitting position and have to go till 1100 mm for Standing Position. The Console Table Top / Working Surface should be made in 12mm Solid Acrylic Panel (ASS) Cladded on 25mm MDF Board. Drawing is enclosed.
c. Size of modular control desk shall be as per drawing and it should have arrangement for placing of 2 workstations monitor for 2 Users on each control desk.
d. The Basic Structure should consist of Extruded AL Profiles (6063T6 grade) binded by Top & Bottom (min 2mm) MS Frames formed in such a way as to provide maximum buckling and torsion resistance. The Front & Back Panels should be openable / removable (with Locks) made of laminated MDF Board in min thickness of 18mm. The front Shutter will be of Toughed Glass (min. 4mm Thick) cladded on 18 mm MDF and Back shutter in 18 mm MDF Boards with Fan for Heat decapitation.
e. The Side Panels should be fixed type, made in 26mm MDF Board Cladded on 18mm MDF Board. All panels must be attached to the frame with concealed fasteners. Console access panels (Front & Rear Panels) must be removable without the use of tools. The Front panel should be positioned in such a way that there should be sufficient leg space (min of 400mm from the front edge of the Table Top).
f. All sheet metal / aluminum parts must be finished with electrostatic powder coating with average of min 80 microns over all surfaces.
g. Console frame shall have provisions for leveler legs to be incorporated into the frame.

Work Surface

a. Console Table Top should be made of 12mm Solid Acrylic Panel (ASS) over 25mm MDF Board, with no sharp Edges. The work surface platform shall have smooth edges and transitions, thus avoiding sharp corners or potential rib catchers for operator safety.

Modular Rear Wall (Slat Wall)

a. Wall should be of min 86 mm (Height) and approx. 200-300 mm high from the Monitor Base.
b. Modular walls shall be made of 2mm thick Extruded Aluminum (6063T6 aluminum alloy).
c. It should have high Load bearing capacity. Minimum weight carrying capacity has to be 20 KGs per Meter.

Monitor Arms

a. It shall be capable for mounting all type of existing LCD monitor with dimensions between 17" to 27" using suitable adopter/additional base plate, if required any.
b. Vendor shall provide the suitable adopter/additional base plate for mounting the existing LCD monitors.
c. It shall allow the rotate/ tilt/ raise/the monitors as well as fix their adjustment.
d. The monitor arm should be Articulating monitor arm

Miscellaneous

a. There shall be a closed cabinet (02 no in one Modular Control Desk) below the modular control desk for placing of CPU. Cabinet should have proper cooling system. CPU needs to be accessible from front as well as rear side of control desk for easy working and maintenance.
b. The cabinet shutters shall be of Butt Hinged type with 18mm thick MDF.
c. Rear shutters of each console should have provision of Airflow opening for cooling and heat dissipation effect.
d. Rear panel shall have ventilation fans mounted on it.
e. It shall have proper arrangement for flow of cables i.e. LAN Cable, Power cable, VGA cable, Mouse cable, Keyboard etc.
f. Design of control desk shall allow cables from the floor cable channel.
g. Control desk shall be equipped with individual power distribution unit (PDU) (06 no for one Modular Control Desk) and capable of being switched on/off individually. Power supply socket should be dual type i.e. Universal type.
h. All bolts must be of SS material to avoid rust due to environment.

Prospective View of Control Desk

Prospective View of Control Room

4.17.2.5.14 MPLS Router

Sr. No	Specifications
1	**Architecture**
1.1	Router shall have advanced Multi-Service Architecture delivering high-performance routing, switching, security, voice and mobility
1.2	Router shall be based on Multi-core RISC-based or equivalent processor
1.3	The router shall have three onboard 10/100/1000 Mbps Copper LAN ports (RJ-45) which shall support routed mode as well
1.4	The router shall have minimum six WAN Interface card slots supporting LAN/WAN/Voice interface cards - Ethernet, V.35, ISDN BRI/PRI, E1/T1, Voice FXS/FXO, 3G Module etc in addition to the ports mentioned above
1.5	The router shall have one USB interface and 1 RJ-45 console port
1.6	The router shall be configured with 2 GB DDR3 SDRAM expandable to 4GB
1.7	The router shall support redundant power supply
1.8	The router shall support Service Modules to port applications like virtualization,

	optimization etc
2	**Performance**
2.1	The router shall have up to 2.5 Mpps forwarding throughput
2.2	40 Gbps of backplane capacity
2.3	The router shall have embedded hardware encryption accelerator to improve encryption performance
2.4	Routing table size of 500000 entries (IPv4), 200000 entries (IPv6)
2.5	Minimum 1Gbps of IPSec encryption performance
3	**Features (Any licenses required shall be included from Day 1)**
3.1	The router shall support the following WAN Protocols - PPP, HDLC, PPPoE, ISDN etc
3.2	The router shall support the following IP Routing Protocols (IPv4) - Static Routing, RIP, OSPF, BGP, and IS-IS
3.3	The router shall support the following IP Routing Protocols (IPv6) - Static Routing, RIPng, OSPFv3, BGP+, and IS-ISv6
3.4	The router shall support Multicast routing protocols for IPv4 and IPv6 - PIM-DM, PIM-SM and Source-Specific Mode (SSM)
3.5	The router shall support Multicast Source Discovery Protocol (MSDP) for inter-domain multicast applications
3.6	The router shall support Multicast Border Gateway Protocol (MBGP)
3.7	The router shall support policy routing for increased performance and security
3.8	The router shall have QoS features including Traffic policing, shaping, Congestion management, congestion avoidance etc
3.9	The router shall have embedded security capabilities like Firewall, IPSec, ACL Filtering etc
3.10	The router shall provide IPv6 transition mechanisms like NAT-PT, Tunneling etc
3.11	Dynamic VPN Capability for ease of VPN deployment
3.12	The router shall support Multiprotocol Label Switching (MPLS) Layer 3 VPN, Layer 2 VPN, MPLS QoS, Martini draft and Kompella-draft technologies
3.13	Layer-2 features like Spanning Tree Protocol (STP), VLANs, IGMP, Port mirroring etc
3.14	All the advanced software features shall be enabled from Day 1 (Routing, Security, Voice, MPLS etc) to avoid any additional licensing complexity or cost in future
4	**Management & Other features**
4.1	SNMP V1/V2c/V3, RMON/sFlow
4.2	RADIUS/TACACS+ for management security

4.3	Integrated console port provided with console cable
4.4	TR069 protocol support for Zero-touch deployment
4.6	Shall analyze network performance and service quality, such as jitter, delays etc. by sending test packets
4.7	Operating temperature 0ºC to 45ºC
4.8	19" Rack mountable (any hardware required shall be offered)
4.9	Shall have Green initiative by providing support for RoHS and WEEE regulations
4.10	Maximum power rating of 140 Watts

4.17.2.5.15 Access Switch/ L2 Switch

Sl . No	Parameters	Specifications
1	Speed	1000Mbps
2	Ports	48 Gigabit Ports, 4 SFP Ports
3	Type	Layer 2
4	Manageability	Centrally Manageable with required software
5	Architecture	Shall be 1RU, 19" Rack Mountable
		48 RJ-45 autosensing 10/100/1000 ports with 4 SFP Ports
		All ports shall be compliant on Gigabit Copper Ports
		1 RJ-45 (serial RS-232C) or USB micro-B console port.
		Packet buffer size of minimum 1.5 MB to support video/streaming traffic and huge file transfers (like medical scan documents etc)
		Shall have switching capacity for providing non-blocking performance on all Gigabit ports.
6	Resiliency	IEEE 802.1D Spanning Tree Protocol, IEEE 802.1w Rapid Spanning Tree Protocol and IEEE 802.1s Multiple Spanning Tree Protocol
		IEEE 802.3ad Link Aggregation Control Protocol (LACP) up to eight links (ports) per group
		Layer 2 Features
		MAC address table size of 16000 entries
		Shall support up to IEEE 802.1Q and minimum 512 VLANs simultaneously

		Shall support GARP VLAN Registration Protocol or equivalent feature to allow automatic learning and dynamic assignment of VLANs
		Shall support Jumbo frames to improve the performance of large data transfers
		Internet Group Management Protocol (IGMP)
		Multicast Listener Discovery (MLD) snooping
		IEEE 802.1AB Link Layer Discovery Protocol (LLDP) and LLDP-MED (Media Endpoint Discovery)
		IPv6 host and Dual stack (IPv4/IPv6) support to provide transition mechanism from IPv4 to IPv6
7	QoS and Security Features	Access Control Lists for traffic filtering
		Source-port filtering or equivalent feature to allow only specified ports to communicate with each other
		Traffic prioritization based on IP address, IP Type of Service (ToS), Layer 3 protocol, TCP/UDP port number, source port, and DiffServ
		Shall support traffic classification into eight priority levels mapped to two or four queues using Weighted deficit round robin (WDRR) queuing
		Shall support traffic rate-limiting per port
		IEEE 802.1x to provide port-based user authentication with multiple 802.1x authentication sessions per port
		Media access control (MAC) authentication to provide simple authentication based on a user's MAC address
		Web-based authentication to provide a browser-based environment to authenticate clients that do not support the IEEE 802.1X supplicant
		Concurrent IEEE 802.1X and Web or MAC authentication schemes per port
		Port security to allow access only to specified MAC addresses
		MAC address lockout to prevent particular configured MAC addresses from connecting to the network

		STP BPDU port protection to prevent forged BPDU attacks
		STP Root Guard to protect the root bridge from malicious attacks or configuration mistake
8	Management Features	Configuration through the CLI, console, Telnet, SSH and browser-based management GUI (SSL)
		SNMPv1, v2, and v3 and Remote monitoring (RMON) support
		sFlow (RFC 3176) or equivalent for traffic analysis
		TFTP and Secure FTP support
		Dual flash images to provide independent primary and secondary operating system files
		Multiple configuration files to allow multiple configuration files to be stored to a flash image
		RADIUS/TACACS+ for switch security access administration
		Simple Network Time Protocol (SNTP) or equivalent support
		Environmental Features
		Shall support IEEE 802.3az Energy-efficient Ethernet (EEE) to reduce power consumption
		Operating temperature of 0°C to 45°C
		Safety and Emission standards including EN 60950; IEC 60950; VCCI Class A; FCC part 15 Class A

4.17.2.5.16 Data Center Switch/ Core Switch

#	Parameter	Minimum Specifications
1.	Ports	• 10/100/1000 Base-TX Ethernet ports/FX and extra 2 numbers of Base-SX/LX ports should be one either 24 or 48 • FX/TX Splits for a switch as per location requirement All ports can auto-negotiate between 10Mbps/ 100Mbps/ 1000Mbps, half-duplex or full duplex and flow control for half-duplex ports. Switch should have Internal redundant power supply from day 1 The switch should support dedicated stacking ports with stacking

		bandwidth of minimum 80 Gbps. It should be possible to stack minimum 8 switches as part of the same virtual stack.
2.	Switch type	Layer 3
3.	MAC	Support 8K or 16K MAC address. (as per solution offered)
4.	Forwarding rate	Packet Forwarding Rate should be 70.0 Mbps or better
5.	Port Features	Must support Port Mirroring, Port Trunking and 802.3ad LACP Link Aggregation port trunks
6.	Flow Control	Support IEEE 802.3x flow control for full-duplex mode ports.
7.	Protocols	• Support 802.1D, 802.1S, 802.1w, Rate limiting • Support 802.1X Security standards • Support 802.1Q VLAN encapsulation, IGMP v1, v2 and v3 snooping • 802.1p Priority Queues, port mirroring, DiffServ • Support based on 802.1p priority bits with at least 8 queues • DHCP support & DHCP snooping/relay/optional 82/ server support • Shaped Round Robin (SRR) or WRR scheduling support. • Support for IPV6 ready features with dual stack • Support up to 255 VLANs and up to 4K VLAN IDs • Support IGMP Snooping, IGMP Querying and Multicasting Should support Loop protection and Loop detection, Should support Ring protection (when used in aggregation location)
8.	Access Control	• Support port security • Support 802.1x (Port based network access control). • Support for MAC filtering. Should support TACACS+ and RADIUS authentication
9.	VLAN	• Support 802.1Q Tagged VLAN and port based VLANs and Private VLAN • The switch must support dynamic VLAN Registration or equivalent Dynamic Trunking protocol or equivalent

10.	Protocol and Traffic	• Network Time Protocol or equivalent Simple Network Time Protocol support • Switch should support traffic segmentation Traffic classification should be based on user-definable application types: TOS, DSCP, Port based, TCP/UDP port number
11.	Management	• Switch needs to have RS-232/USB console port for management via a console terminal/PC • Must have support SNMP v1,v2 and v3 • Should support 4 groups of RMON Should have accessibility using Telnet, SSH, Console access, easier software upgrade through network using TFTP etc. Configuration management through CLI, GUI based software utility and using web interface

4.17.2.5.17 Server/ Networking Rack

Parameter	Minimum Requirement Specifications
Type	• 19" 42U racks mounted on the floor • Floor Standing Server Rack - 42U with Heavy Duty Extruded Aluminum Frame for rigidity. Top cover with FHU provision. Top & Bottom cover with cable entry gland plates. Heavy Duty Top and Bottom frame of MS. Two pairs of 19" mounting angles with 'U' marking. Depth support channels - 3 pairs with an overall weight carrying Capacity of 500Kgs. • All racks should have mounting hardware 2 Packs, Blanking Panel. • Stationery Shelf (2 sets per Rack) • All racks must be lockable on all sides with unique key for each rack • Racks should have Rear Cable Management channels, Roof and base cable access
Wire managers	• Two vertical and four horizontal
Power Distribution Units	• 2 Per Rack • Power Distribution Unit - Vertically Mounted, 32AMPs with 25 Power Outputs. (20 Power outs of IEC 320 C13 Sockets & 5 Power outs of 5/15 Amp Sockets), Electronically controlled circuits for Surge & Spike protection, LED readout for the total current being drawn from the channel, 32AMPS MCB, 5 KV AC isolated input to Ground & Output to Ground
Doors	• The racks must have steel (solid / grill / mesh) front / rear doors and side panels. Racks should NOT have glass doors / panels. • Front and Back doors should be perforated with at least 63% or higher perforations. • Both the front and rear doors should be designed with quick release hinges allowing for quick and easy detachment without the use of tools.

Fans and Fan Tray	• Fan 90CFM 230V AC, 4" dia (4 Nos. per Rack) • Fan Housing Unit 4 Fan Position (Top Mounted) (1 no. per Rack) – Monitored - Thermostat based - The Fans should switch on based on the Temperature within the rack. The temperature setting should be factory settable. This unit should also include - humidity & temperature sensor
Metal	• Aluminum extruded profile
Side Panel	• Detachable side panels (set of 2 per Rack)

4.17.2.5.18 LED Display

Sl. No	Parameters	Specifications
1	Technology	LCD –LED Back Lit
2	Size in inches	55”
3	Native Resolutions	1920x1080
4	Brightness	400 Nits or high
5	Viewing angle	178° x 178° or more
6	Minimum Input Ports	• 1-USB with Auto Playback, • 3-HDMI, • 1-VGA • 1-Rs232 • 1-RJ45 • 1- CVBS/Component-1
7	Smart Features	Built in Wi-Fi & Miracast/Screen Sharing ,SNMP support, Wake on LAN,Built in SOC
8	Audio (Capacity of Speaker)	Minimum 10 Watts x 2 or more speakers
9	Power Consumption	100 Watts (Max)
10	Power Type	Built-in Power
11	Energy Saving Feature	Yes
12	Certification	• Latest Energy Star Certification, • UL,FCC
14	Box Should Contain	LED Display unit, Table Top Stand and Other Required Cables (Remote Control, Power Cable)

15	Wall Mount installation	Required

4.17.2.5.19 O&M of all the IT hardware items

In the commercial bid template price for O&M of all the IT hardware is asked. O&M of hardware includes warranty, guarantee, necessary support and uplift.

All the IT/Electronic equipment should meet Limit 'B' of EMI/EMC specifications to mitigate the effect of EMI/EMC because of equipment functioning in close proximity.

4.17.2.5.20 Supply of Line Items in Phases

The City ICCC is being setting up in the building which will be available when the vendors comes on board. After 18 months the city ICCC will be shifted to another physical location. Considering this all the line items will be supplied in two phases.

Phase-I: Immediately after contract agreement is signed.

Phase- II: 18 Months after the contract agreement. Bidder has to supply the items of phase II at the cost mentioned in the commercial bid. Following are the line items which will be supplied after 18 months of contract signing.

- Access Control Switch
- CCTV Camera system
- Fire and Smoke Detector System

Note: If the Phase II starts after 18 months of contract signing then it will be considered at change request and payment will be made as per mutual understanding between HDSCL and bidder.

4.12.1 Other Important Technical Details and Design Parameters

4.12.1.1 Production and DR Data Center

Data Center Deployment model

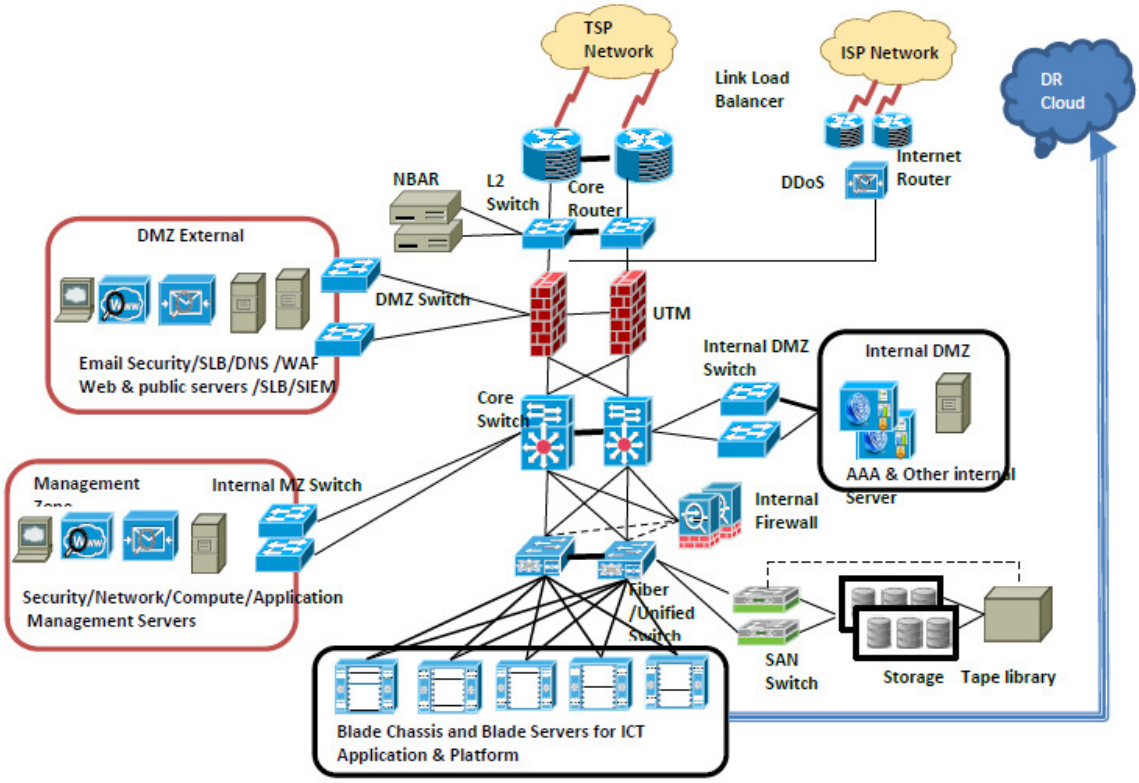
A common data center for all the smart cities of Karnataka is being built up by KUIDFC at KMDS premises. Cost of building the DC and DR will be equally shared by cities. It will be a full-fledged Tier III data center. The city shall use the Karnataka Municipal Data Society (KMDS) Data Centre for hosting the compute and storage of the city's ICCC, on a "managed service" basis. The

existing infrastructure of the KMDS like firewall, Intrusion Prevention System (IPS), electricity and other requisite facilities will be utilized by HDSCL.

As it is proposed to have a converged architecture for all smart cities, there will be a common hardware and software platformviz. storage, compute, database, OS etc. and allocation of the hardware and software will be done dynamically by KMDS, based on city requirements.

Data Centre Architecture:

The indicative architecture of centralized data center at KMDS is given below:



MSI shall be responsible for building the Centralized datacenter to meet the TIER III Standards. MSI shall design the centralized datacenter to achieve high availability, Security as per MoUD/MeitY guidelines and Scalability to meet the future requirements of the Authority. The disaster recovery (DR) to be provisioned on cloud as per MoUD guidelines. There is no provision of DR of videos feeds being stored at city level.

The Centralized Datacenter is proposed to be built to host the smart cities applications in the state of Karnataka. The smart city applications are proposed to be integrated into the Integrated Command Control Center(ICCC)/Integrated city operation Platform (ICOP). The ICOP will have multi-tenant feature to accommodate multiple cities within the application.

As per the indicated designed mentioned, security aspects like E-Mail security and DNS security etc. will be taken care by MSI. LSI does not need to cater for all the components which are already covered under the scope of MSI. This will ensure DC and DR as optimal cost solution. For more understanding on this vendors may reach out to KUIDFC for seeking clarifications.

Database and Operating system for hosting city application at DC will be procured by LSI.

For future city applications development and integration DB and OS requirements should be mentioned in the respective RFPs.

As per the Govt. of India policy, Open source Software and tools are preferred

Disaster Recovery:

The DR centre will be on cloud basis for the initial 2 years from the go-live date and after establishment of State's own DR centre, the same shall be migrated to the State DR Centre.

The Cloud service provider will only provide compute and storage infrastructure, the LSI shall be responsible for all Operating System (OS), database and application hosting on the cloud. The LSI shall quote onetime migration cost for shifting of the OS, database and application from Cloud to the State DR centre, which shall be operated once State DR centre is established.

The Recovery Point Objective (RPO) and Recovery Time Objective (RTO) shall be application specific and the same shall be finalized after due consultation with the Stakeholders. As per the Ministry of Electronics and Information Technology (MeitY), the RPO shall be less than or equal to 2 hours and RTO shall be less than or equal to 4 hours. The key transaction data shall have RPO of 15 minutes.

The DR Service provider shall follow Ministry of Electronic and Information Technology (MEITY) guidelines.

4.12.1.2 Backup and Data Retention Policy

In today's business world, information is created and stored electronically on the computer. Therefore, the importance of creating and implementing a Backup and Data Retention Policy becomes more complicated, but extremely important in order to protect against cases of future litigation. A data retention policy provides for the systematic review, retention and destruction of data received or created in the course of business. A data backup and retention policy will identify on what media and when the backup will be taken and data that need to be maintained and contain guidelines for how long certain data should be kept.

In India there is no central act which laid down provisions related to data retention laws. But there are different policies/guidelines issued by different agencies. It is primarily based on the type of data and use of data. In a similar way data backup and retention guidelines/ policy for data related to smart cities may be drafted.

Following are the specific applications, their related data and number of days that data to be retained, backup frequency will be daily and incremental.

SL No.	System Description	Backup Frequency	No of days data can be retained
1.	Smart IT Solid Waste Management System	Daily Incremental, weekly full, half yearly full and yearly full	1 Year
2.	Any other wherever financial transactions is taking place		1 Year
3.	Video Feeds at City Level		7 days
4.	Any other sensors/systems		30 Days

This data retention will be applicable only for the applications which are being developed and hosted and Data center, not for the applications which will be integrated with ICCC. Applications which are being integrated through APIs, their database being maintained at their primary data center not DC at KMDS.

BACKUP:

Physical media of back up should be Tape Library only. There should be no back up on hard disk drive.

4.12.1.3 Scope & Functional Specifications

- LSI is required to co-locate all the hardware/software and related items as per the design offered for the smart city infrastructure including SLA monitoring and Help desk management, in a Tier III or above data Center complying with standard guidelines as per Telecommunications Infrastructure UPTIME/TIA-942.
- The Data center shall be available for 24x7x365 operation.
- The smart city infrastructure shall have built in redundancy and high availability in compute and storage to ensure that there is no single point of failure.

5. Handholding and Training

In order to strengthen the staff, structured capacity building programs shall be undertaken for multiple levels in the organizational hierarchy like foundation process/ soft skills training to the staff for pre-defined period. Also, refresher trainings for Command Control Centre/City Operation Staff and designated Authorities & Police staff shall be a part of Capacity Building. It is important to understand that training needs to be provided to each and every staff personnel of such operation centres. These officers shall be handling emergency situations with very minimal turnaround time.

- LSI shall prepare and submit detailed Training Plan and Training Manuals to Authority/authorized entity for review and approval.
- Appropriate training shall be carried out as per the User Training Plan prepared in detail stating the number of training sessions to be held per batch of trainees, course work for the training program, coursework delivery methodologies and evaluation methodologies in detail.
- LSI shall be responsible for necessary demonstration environment setup of all ICT solutions in this RFP to conduct end user training. End user training shall include all the equipment including but not limited to all the applications and infrastructure at Operation centres, data centres & field Locations. End user training shall be conducted at a centralized location or any other location as identified by Authority with inputs from the SI.
- LSI shall conduct end user training and ensure that the training module holistically covers all the details around hardware and system applications expected to be used on a daily basis to run the system.
- LSI shall impart operational and technical training to internal users on solutions being implemented to allow them to effectively and efficiently use the surveillance system.
- LSI shall prepare the solution specific training manuals and submit the same to Authority for review and approval. Training Manuals, operation procedures, visual help-kit etc. shall be provided in English language.
- LSI shall provide training to selected officers of the Authority covering functional, technical aspects, usage and implementation of the products and solutions.
- LSI shall ensure that all concerned personnel receive regular training sessions, from time to time, as and when required. Refresher training sessions shall be conducted on a regular basis.

- An annual training calendar shall be clearly chalked out and shared with the Authority along with complete details of content of training, target audience for each year etc.
- LSI shall update training manuals, procedures manual, deployment/Installation guides etc. on a regular basis (Quarterly/ Biannual) to reflect the latest changes to the solutions implemented and new developments.
- The LSI shall ensure that training is a continuous process for the users. Basic computer awareness, fundamentals of computer systems, basic, intermediate and advanced application usage modules shall be identified by the LSI.
- Systematic training shall be imparted to the designated trainees that shall help them to understand the concept of solution, the day-to-day operations of overall solution and maintenance and updating of the system to some extent. This shall be done under complete guidance of the trainers provided by the LSI.
- Time Schedule and detailed program shall be prepared in consultation with [the Authority] and respective authorized entity (Police). In addition to the above, while designing the training courses and manuals, LSI shall take care to impart training on the key system components that are best suited for enabling the personnel to start working on the system in the shortest possible time.
- LSI is required to deploy a Master Trainer who shall be responsible for planning, designing and conducting continuous training sessions.
- Training sessions and workshops shall comprise of presentations, demonstrations and hands-on mandatorily for the application modules.
- Authority shall be responsible for identifying and nominating users for the training. However, LSI shall be responsible for facilitating and coordinating this entire process.
- LSI shall be responsible for making the feedback available for the Authority/authorized entity to review and track the progress, In case, after feedback, more than 30% of the respondents suggest that the training provided to them was unsatisfactory or less than satisfactory then the SI shall re-conduct the same training at no extra cost.

Type of Trainings

- Following training needs is identified for all the project stakeholders:

1. **Basic IT training:** This module shall include components on fundamentals of:
   - Computer usage,
   - Network,
   - Desktop operations,

- User admin,
- Application installation,
- Basic computer troubleshooting etc.

2. Initial Training as part of Project Implementation

- Functional Training
  - Basic IT skills
  - Software Applications (City Operation Centre and Command & Control Centre)
  - Networking, Hardware Installation
  - Centralized Helpdesk
  - Feed monitoring
- Administrative Training
  - System Administration Helpdesk, FMS, BMS Administration etc.
  - Master trainer assistance and handling helpdesk requests etc.
- Senior Management Training
  - Usage of all the proposed systems for monitoring, tracking and reporting,
  - MIS reports, accessing various exception reports

3. Post Implementation Training

- Refresher Trainings for the Senior Management
- Functional/Operational training and IT basics for new operators
- Refresher courses on System Administration
- Change Management programs

6. Project Implementation Timelines

List of the broad activities to be carried out by the Systems Integrator and the timelines from the date of Work Order are given in the table below. "T1" stands for the Date of signing the contract.

B. Activity		Individual phases of the activities	Timeline
		Phase-I (270 Days)	
1	Resource Mobilization	• Resource Mobilization	T1+15 Days
2	Implementation of ICT Solid Waste Management Application, and Fire emergency management (GPS installation for fire vehicle tracking)	• Inception Report • SOPs and Use-Cases for integration of individual ICT application with Common Command and Control Application	T1+30 Days
		Procurement of the hardware & software infrastructure required for : • Implementation of Solution Components • Set-up of Command and Control Centre	T1+45 days
		FRS, SRS for implementation and integration of individual ICT application with Common Command and Control Application	T1+60 Days
		*Data Centre, DR & Common Operating Platform availability (**Note**: * - ***In the scope of MSI***)	T1+60 days
		Installation & Commissioning of field devices and H/W , S/W required at the Command and Control Centre	T1+90 days
		Development and Testing of standalone application	T1+120 Days
		Testing of Application Integration	T1+150 Days
		Completion of Integration with UAT sign off	T1+ 180 Days
3	Integration of Common	ICT Solid Waste Management Application	

	Command and Control Application (SOPs, Use Cases, FRS, SRS, Integration Testing) with	City Surveillance (Police Feed)	T2+270 days
		Intelligent Public Transport System	
		Intelligent Traffic Management	
		Smart Parking	
		VMS	
		e-Governance	
		Geographical Information System (GIS)	
4	Phase I operationalization & Go-Live	Go-Live	T1+270 days
Phase – II (271-450 Days)			
5	Phase II Implementation of Geographical Information System (GIS)	SOPs and Use-Cases for integration of individual ICT application with Common Command and Control Application	T1+300 Days
		Procurement of the residual/ additional hardware & software infrastructure required from phase I	T1+315 days
		FRS, SRS for implementation and integration of individual ICT application with Common Command and Control Application	T1+345 Days
		Installation & Commissioning of field devices	T1+360 days
		Development and Testing of standalone application	T1+390 Days
		Testing of Application Integration	T1+420 Days
		Completion of Integration with UAT sign off	T1+ 450 Days
6	Integration of Common Command and Control Application (SOPs, Use Cases, FRS, SRS, Integration Testing) with	Integration of City surveillance (Other than police feed) with City ICCC. Provision to see live feeds at authorized places.	T1+ 450 Days (271-450 Days)
		Street Light Control	
		Digital Signage (ABD Area)	
		Variable Messaging System (ABD Area)	

		Geographical Information System (GIS)	
		e-Governance	
		Water SCADA	
		Fire, Emergency and Disaster Management	
7	Phase II operationalization & Go-Live	Go-Live	T1+450 days

7. Project Deliverables

#	Key Activities	Deliverables
Project Inception Phase		
1	Project Kick Off	1. Project Development Plan 2. Risk Management and Mitigation Plan
2	Deployment of manpower	
Requirement Phase		
3	Assess the requirement of IT Infrastructure and Non IT Infrastructure	1. Functional Requirement Specification Document 2. System Requirement Specification document (SyRS) 3. Requirements Traceability Matrix 4. Site Survey Report
4	Assessment of Business processes	
5	Assessment of requirement of Software requirements	
6	Assess the Integration requirement	
7	Assess the connectivity requirement for field locations (including Building)	
8	Assessment the Network laying requirement	
9	Assessment of training requirement	
Design Phase		
10	Formulation of Solution Architecture	1. Final Bill of Quantity 2. HLD documents 3. LLD documents 4. Application architecture documents. 5. Concept of Operations (CONOPS) 6. Technical Architecture documents. 7. Network Architecture documents. 8. ER diagrams and other data modeling documents. 9. Logical and physical database design. 10. Data dictionary and data definitions. 11. GUI design (screen design, navigation, etc.). 12. Test Plans 13. SoPs 14. Change management Plan
11	Creation of Detail Drawing	
12	Detailed Design of Smart City Solutions and CONOPS (Concept of Operations)	
13	Development of test cases (Unit, System Integration and User Acceptance)	
14	Preparation of final bill of quantity and material	
15	SoP preparation	
16	Helpdesk setup	1. IT and Non IT Infrastructure Installation Report 2. Completion of UAT and closure of observations
17	Procurement of Equipment , edge devices, COTS software (if any), Licenses	
18	IT and Non IT Infrastructure Installation	

#	Key Activities	Deliverables
19	Development, Testing and Production environment setup	report 3. Training Completion report 4. Application deployment and configuration report
20	Network connectivity (All activities other that bandwidth provisioning)	
21	Software Application customization	
22	Development of Bespoke Solution (if any)	
23	Integration with Third party services/application (if any)	
24	Unit and User Acceptance Testing	
25	Preparation of User Manuals , training curriculum and training materials	
26	Role based training(s) on the Smart City Solutions	
Integration Phase		
27	SoP of implementation	1. Integration Testing Report
28	Integration with GIS and Command and Control Centre	
29	Other Integrations	
Go –Live		
30	Go Live	1. Go-Live Report
Operation and Maintenance		
31	Operation and Maintenance of IT, Non IT infrastructure and Applications	1. Detailed plan for monitoring of SLAs and performance of the overall system 2. Fortnightly Progress Report 3. Monthly SLA Monitoring Report and Exception Report 4. Quarterly security Report 5. Issues logging and resolution report
32	SLA and Performance Monitoring	
33	Logging, tracking and resolution of issues.	
34	Application enhancement	
35	Patch Updates	
36	Helpdesk services	

8. Payment Terms and Schedule

- The request for payment shall be made to the Authority in writing, accompanied by invoices describing, as appropriate, the services performed, and by the required documents submitted pursuant to general conditions of the contract and upon fulfilment of all the obligations stipulated in the Contract.
- Due payments shall be made promptly by the Authority, generally within thirty (30) days after submission of an invoice or request for payment by SI
- The currency or currencies in which payments shall be made to the SI under this Contract shall be Indian Rupees (INR) only.
- All remittance charges shall be borne by the SI.
- In case of disputed items, the disputed amount shall be withheld and shall be paid only after settlement of the dispute.
- Any penalties/ liquidated damages, as applicable, for delay and non-performance, as mentioned in this RFP document, shall be deducted from the due payments of the respective milestones.
- Taxes, as applicable, shall be deducted / paid, as per the prevalent rules and regulations

8.1 Payment Schedule

Payment to LSI after successful completion of the target milestones (including specified project deliverables), shall be made as under:

No.	Scope of Work	Timelines	Payment
1.	Upon finalization of SRS, FRS & SDD	T+2 Months	• 10% of Total CAPEX value
2.	Upon Completion of Phase I Activity	T + 9 Months	• 90% Of Phase 1 CAPEX Value
2a.	Goods / Product Delivery for Phase I	T + 9 Months	• 60 %
2b.	Phase I Operationalization & Go Live		• 40 %
3	Upon Completion of Phase II Activity	T + 15 Months	• 90% Of Phase 2 CAPEX Value
3a	Goods / Product Delivery for Phase II	T + 15 Months	• 60 %
3b	Phase II Operationalization & Go Live		• 40 %
4	Operations &	T1 + 60	• OPEX Value in equal quarterly

	Maintenance phase for a period of 60 months from the date of Go Live of the last solution	Months	instalments

Note:

- T is the date of signing of contract
- T1 is the date of Go Live of the last phase.

9. SERVICE LEVELS

The purpose is to define the levels of service provided by LSI to the Authority for the duration of the contract.

- Start a processthat monitors the aspect of performance.
- Intimate the authority on the drops of performance below the threshold defined by the Authority
- Help Authority control the levels and performance of MSI's services

The Service Levels are between the Authority and LSI.

9.1 Service Level Agreements & Targets

- This section is agreed to by Authority and LSI as the key performance indicator for the project. This may be reviewed and revised according to the procedures detailed in Clause 64- SLA Change Control.
- The following section reflects the measurements to be used to track and report system's performance on a regular basis. The targets shown in the tables Clause 61 of this RFP are for the period of contract.
- The procedures in Clause 26 shall be used if there is a dispute between Authority and LSI on what the permanent targets should be.

9.2 Service Level Monitoring

- Service Level parameters defined in Clause 61 shall be monitored on a periodic basis, as per the individual parameter requirements. The Authority will arrange for providing appropriate web based SLA measurement and monitoring tools with requisite number of credentials. The LSI needs to provide all requisite access to the Authorities designated personnel for configuring all the associated components with the SLA management software. Authority shall also have the right to have an independent technical auditor, third party appointed by the authority for monitoring the Service levels. LSI shall be expected to take immediate corrective action for any breach in SLA. In case issues are not rectified to the complete satisfaction of Authority, within a reasonable period of time defined in this RFP, then the Authority shall have the right to take appropriate penalizing actions, or termination of the contract.
- Performance Penalty for not meeting a measurement parameter for any two months in consecutive quarters shall result in twice the penalty percentage of that respective measurement parameter in the third quarter for all the three months at the discretion of the Authority.
- Maximum Penalty applicable for any quarter shall not exceed 10% of the 'applicable fees' for the respective quarter.
- Three consecutive quarterly deductions of 10% of the applicable fee on account of any reasons shall be deemed to be an event of default and termination as per Clause 48 of this Section of RFP respectively and the consequences as provided in Clause 49 of this section of RFP shall follow at the discretion of the Authority.
- The payment to the agency shall be on Quarterly basis as stated in the RFP.
- For purposes of the SLA, the definitions and terms as specified in the document along with the following terms shall have the meanings set forth below:

    a) "Total Time" - Total number of hours in the quarter (or the concerned period) being considered for evaluation of SLA performance.

b) "Uptime" – Time period for which the specified services/ outcomes are available in the period being considered for evaluation of SLA.

c) "Downtime"- Time period for which the specified services/ components/ outcomes are not available in the concerned period, being considered for evaluation of SLA, which would exclude downtime owing to Force Majeure & Reasons beyond control of the successful bidder.

d) "Scheduled Maintenance Time" - Time period for which the specified services/ components with specified technical and service standards are not available due to scheduled maintenance activity. MSI is required to take at least 10 days prior approval from the authority for any such activity. The scheduled maintenance should be carried out during non-peak hours (like post mid-night, and should not be for more than 4 hours. Such planned downtime would be granted max 4 times a year.

e) "Incident" - Any event / abnormalities in the service being rendered, that may lead to disruption in normal operations and services to the end user.

9.3 Measurement & targets

9.3.1 Implementation phase related performance levels

	Activity		Individual phases of the activities	Timeline	Penalty for delay
Phase-I (270 Days)					
1	Resource Mobilization	•	• Resource Mobilization	T1+15 Days	Delay of one week, 0.05% of Contract Value Delay of Two week, 0.075% of Contract Value Subsequent delay will result in deduction of 0.1% of Contract Value
2	Implementation of ICT enabled Solid Waste Management Application, Smart Parking, Intelligent Traffic Management System, VMS, Smart meters , environmental sensors, Digital bill boards, Wi-hotspots, Command and		• Inception Report • SOPs and Use-Cases for integration of individual ICT application with Common Command and Control Application	T1+30 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Procurement of the hardware & software infrastructure required for :	T1+45 days	0.5% of the Total Capex for the activity per week

	Activity		Individual phases of the activities	Timeline	Penalty for delay
	Control Center, PIS		• Implementation of Solution Components • Set-up of Command and Control Centre		of delay or part thereof upto maximum of 10% of the Capex.
			FRS, SRS,LLD, HLD, CONOPS, for implementation and integration of individual ICT application with Common Command and Control Application	T1+60 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Installation & Commissioning of field devices and H/W , S/W required at the Command and Control Centre	T1+90 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Development and Testing of standalone application	T1+120 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Testing of Application Integration	T1+150 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Completion of Integration with UAT sign off	T1+ 180 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto

	Activity		Individual phases of the activities	Timeline	Penalty for delay
					maximum of 10% of the Capex.
3	Integration of applications at Common Operating platform		ICT Solid Waste Management Application	T1+270 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			City Surveillance (Police Feed)		
			Intelligent Public Transport System		
			Intelligent Traffic Management		
			Smart Parking		
			VMS		
			e-Governance		
			Smart Water Meters		
			Digital Bill Boards		
			Wi-Fi Hotspots		
			Fire & Emergency Management		
			Geographical Information System (GIS)		
4	Phase I operationalization & Go-Live		Go-Live	T1+270 days	
Phase – II (271-450 Days)					
5	Phase II implementation of Physical infrastructure for Smart Parking, ICT enabled Solid Waste Management, Intelligent Traffic Management System, VMS, Digital bill boards, Wi-hotspots, PIS, Network components for city surveillance		Procurement of the residual/ additional hardware & software infrastructure required from phase I	T1+315 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Installation & Commissioning of field devices	T1+360 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10%

	Activity		Individual phases of the activities	Timeline	Penalty for delay
					of the Capex.
6	Integration of applications at Common Operating platform		Integration of City surveillance (Feed from other cameras installed in the city apart from the police feed) with City ICCC.	T1+ 450 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Emergency and Disaster Management		
			Smart Street Lighting		
			e-Governance		
			Water SCADA		
			Geographical Information System (GIS)		
7	Phase II operationalization & Go-Live		Go-Live	T1+450 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.

9.3.2 Operation & Maintenance Period Penalty

Sl No	Measurement	Definition	Target	Penalty
1.	CCC H/W Infrastructure including 1. Work Stations 2. Video Wall 3. CCTV Cameras 4. Phones	Overall CCC Components Availability will be measured by following formula: Component Availability (%) = (Total minutes during the month – Planned downtime - Downtime minutes during the month) *100 / Total minutes during the month Total Time shall be	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B clause 47 of Volume III and occurrence of the same in consecutive two Quarters

Sl No	Measurement	Definition	Target	Penalty
		measured 24x7 basis for CCC. Measurement Tool: Reports from EMSpreferably open source, under the scope of LSI,		will lead to Termination of the Contract as per Section B, clause 48 of the Volume III.
2.	Availability of city Specific Smart ApplicationSoftware 1. Variable Message System 2. Environmental Sensors 3. Intelligent Traffic 4. Smart Parking 5. Smart SWM 6. Smart Meters 7. Environmental sensors 8. Integrated Operation Platform 9. Digital Bill boards 10. Wi-Fi Hotspots	Availability of each Application to be measured separately and penalty will be calculated accordingly. The Uptime will be measured by following formula: Component Availability (%) = (Total minutes during the month – Planned downtime - Downtime minutes during the month) *100 / Total minutes during the month Total Time shall be measured 24x7 basis for CCC. Measurement Tool: Reports from EMS tool in the scope of MSI	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B, clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B, clause 48 of the Volume III of the RFP.
3.	Availability of field infrastructure including 1. GPS/GSM Unit 2. GPS based handheld/ Mobile Device 3. Environmental Sensors 4. Bulk Flow Meters 5. Traffic Controllers 6. Variable Message System/ PIS 7. Cameras 8. Wi-Fi Hotspots 9. Digital Bill boards	Availability of each Application to be measured separately and penalty will be calculated accordingly. The Uptime will be measured by following formula: Component Availability (%) = (Total minutes during the month – Planned downtime - Downtime minutes during the month) *100 / Total minutes during	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B, clause 10of Volume III and occurrence of the same in consecutive two

Sl No	Measurement	Definition	Target	Penalty
	10. Water meters/ Sensors 11. Other Equipment	the month Total Time shall be measured 24x7 basis for CCC. Measurement Tool: Reports from EMS		Quarters will lead to Termination of the Contract as per Section B, clause 48 of the Volume III.
4.	**Camera feed and quality wherever required**			
5a	Ratio of Live cameras v/s Total Cameras at any point of time (To be measured every 1 hour)	Number of live working cameras divided by total number of cameras Measurement Tool: Log from VMS tools wherein alerts to the control room shall be generated on non-functioning of camera	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B, clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 48 of the Volume III.
5b	Average Frame rate maintained for viewing	Average frame rate is 25 FPS to be maintained by all cameras calculated on a Monthly Basis Measurement tool: Log from VMS	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B, clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B

Sl No	Measurement	Definition	Target	Penalty
				clause 48 of the Volume III.
5c	Average Frame rate maintained for Recording	Average frame rate is 12.5 FPS to be maintained by all cameras calculated on a Monthly Basis Measurement tool: Log from VMS	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B, clause 48 of the Volume III.
	Video stream Latency	Time required for transmission of video feed from one point to another applicable to each camera. The Penalty will be calculated on the average time calculated over the Quarter. Measurement tool: Report from EMS	≤40ms	a) <40ms to >= 42 ms- 1% of QP b) <42ms to >= 44 ms - 2% of QP c) Subsequently, for every ms drop in SLA criteria - 1% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 48 of the Volume III.
	Change of Screen from one camera Source to another	Time required for transmission of screen from one camera source to another Measurement tool:	≤2s	a) <2s to >= 3s- 1% of QP b) <3s to >= 4 s - 2% of QP c) Subsequently, for every second drop in SLA criteria - 1% of QP upto maximum

Sl No	Measurement	Definition	Target	Penalty
		Log from VMS		of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 48 of the Volume III.
	Video Feed Query Retrieval Response Time	Time taken for receiving response to a query raised for video feed Measurement tool: Log from VMS	≤10s	a) <10s to >= 12s- 1% of QP b) <12s to >= 14 s - 2% of QP c) Subsequently, for every second drop in SLA criteria - 1% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 48 of the Volume III.

9.3.3 Measurement of Response and Resolution

9.3.3.1 Deducts for Non Performance (Penalty) for Critical Components:

MTTR per Quarter	Fixed Penalty for Breach upto 2 hours buffer.	Additional penalty for every Delayed hour
1-2 Calls not meeting MTTR .	1% of Quarterly Payment	0.1 % of Quarterly Payment
3-5 calls not meeting MTTR	5% of Quarterly Payment	0.1 % of Quarterly Payment
6-10 calls not meeting MTTR	10 % of Quarterly Payment	0.1 % of Quarterly Payment
>10 Calls not meeting	will be treated as Events of	

MTTR per Quarter	Fixed Penalty for Breach upto 2 hours buffer.	Additional penalty for every Delayed hour
MTTR	Default as per the Section B clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 48 of the Volume III.	

The Critical Component includes

- **Server H/W**
- **Storage**
- **Networking Components**
- **Security Components**
- **CCC Room H/W**
- **OS and Databases**
- **All the city Specific applications**

9.3.3.2 Deducts for Non Performance (Penalty) for Non- Critical Components:

MTTR per Quarter	Fixed Penalty for Breach upto 6 hours buffer.	Additional penalty for every Delayed hour
1-2 Calls not meeting MTTR .	0% of Quarterly Payment	0.1 % of Quarterly Payment
3-5 calls not meeting MTTR	1% of Quarterly Payment	0.1 % of Quarterly Payment
6-10 calls not meeting MTTR	5 % of Quarterly Payment	0.1 % of Quarterly Payment
10-14 Calls not meeting MTTR	10 % of Quarterly Payment	
>15 Calls not meeting MTTR	will be treated as Events of Default as per the Section B clause 47 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 48 of the Volume III.	

The Non-Critical Component includes

- **Camera**
- **GPS**

- **Other City Specific Field Level Components**

9.4 Reporting Procedures

- LSI representative shall prepare and distribute Service level performance reports in a mutually agreed format by the 5th working day of subsequent month. The reports shall include "actual versus target" Service Level Performance, a variance analysis and discussion of appropriate issues or significant events. Performance reports shall be distributed to Authority management personnel as directed by Authority.
- Also, LSI may be required to get the Service Level performance report audited by a third-party Auditor appointed by the Authority.

9.5 Issue Management Procedures

General

This process provides an appropriate management structure for the orderly consideration and resolution of business and operational issues in the event that quick consensus is not reached between Authority and LSI.

Implementing such a process at the beginning of the outsourcing engagement significantly improves the probability of successful issue resolution. It is expected that this pre-defined process shall only be used on an exception basis if issues are not resolved at lower management levels.

Issue Management Process

- Either Authority or LSI may raise an issue by documenting the business or technical problem, which presents a reasonably objective summary of both points of view and identifies specific points of disagreement with possible solutions.
- Any unresolved issues/disputes concerning the Project/Contract between the Parties shall first be referred in writing to the Project Manager for his consideration and resolution. If the Project Manager is unable to resolve any issue/dispute within 5 days of reference to them, the Project Manager shall refer the matter to the Program Management Committee. If the Program Management Committee is unable to resolve the issues/disputes referred to them within 15 days the unresolved issue/dispute shall be referred to Steering Committee/high powered committee/Project Implementation Committee for resolution. The Steering Committee within 30 days of reference to them shall try to resolve the issue/dispute.
- If the Steering Committee fails to resolve a dispute as per the above clause, the same shall be referred to arbitration. The arbitration proceedings shall be carried out as per the Arbitration procedures mentioned in Clause 26 of this section of RFP.

9.6 Service Level Change Control

General

It is acknowledged that this **Service levels may change as Authority'sbusiness needs evolve over the course of the contract period**. As such, this document also defines the following management procedures:

a. A process for negotiating changes to the Service Levels

b. An issue management process for documenting and resolving particularly difficult issues.

c. Authority and LSI management escalation process to be used in the event that an issue is not being resolved in a timely manner by the lowest possible level of management.

Any changes to the levels of service provided during the term of this Agreement shall be requested, documented and negotiated in good faith by both parties. Either party can request a change.

Service Level Change Process: The parties may amend Service Level by mutual agreement in accordance. Changes can be proposed by either party. Unresolved issues shall also be addressed. SI's representative shall maintain and distribute current copies of the Service Level document as directed by Authority. Additional copies of the current Service Levels shall be available at all times to authorized parties.

Version Control/Release Management: All negotiated changes shall require changing the version control number. As appropriate, minor changes may be accumulated for periodic release or for release when a critical threshold of change has occurred.

10.0 Integration Capabilities

1) The ICCC will aggregate various data feeds from sensors and systems and further process information out of these data feeds to provide interface /dashboards for generating alert and notifications in real time.

2) The ICCC would also equip city administration to respond quickly and effectively to emergency or disaster situation in city through Standard Operating Procedures (SOPs) and step-by-step instructions. The ICCC shall support and strengthen coordination in response to incidents/emergencies/crisis situations.

3) Single Dashboard for City Infrastructure Management & Smart City Services for Smart Lighting, Parking System, GIS Services and Other Services of Municipality work visualized real time on 2D/3D map of City. This dashboard can be accessed via web application as well as mobile app. The various information that may be accessed from the system but not limited to are as below:

   - Visual alerts generated by any endpoint that is part of the city infrastructure e.g. Surveillance cameras, City lights or any other sensors that manages various city management use cases. (integration with existing city surveillance project by Ahmedabad Traffic police)
   - Access information of water management resources (Disaster management cell at Hubbali - Dharwad will provide the details)
   - Information about waste management resources
   - Various citizen services e.g. Land records, Municipality tax, billing etc.
   - City environmental data
   - Take action based on events generated by any city infrastructure device

4) The system shall provide reporting & audit trail functionalities to track all the information and monitor operator interactions with the system and to impart necessary training to the users

5) Sample Use Cases describing the need of integrated systems are:
   a. **Urban Flooding Scenario**: The water level sensors (used for flood detection on streets) will send the ambient water levels accumulated on the street to the CCC through the available connectivity. The CCC shall baseline the existing water level and rainfall prediction with erstwhile flood levels to generate an alert for flooding. This alert will then be passed over to the citizens through the variable messaging displays and public address system to warn them of possible flooding in a locality.

b. **Evacuating Hazardous places in event of fire**: As soon as the Command Center is intimated of a fire through any of the available channels, Fire tenders shall be dispatched to the location along with guidance for shortest path to the accident site. The Fire tender's journey time shall be optimized by providing the best possible green corridor through ATCS (area Traffic Control System). Event trigger shall be also sent to nearest Police Station & nearby hospitals. IP based public address system will be triggered to vacate the nearby fuel stations (if there is any) to reduce the extent of casualty. Information will be passed over trauma centers in the vicinity to prepare for increased number of emergency care patients.

11.0 Other Requirements

Security: In no circumstances this data accumulated and processed by Command and Control should be compromised. Hence provisions will be made to keep all the data stored in this platform highly secured with required Security framework implementation. The platform will be hosted in Data center (KMDS) at location decided by HDSCL. Further the platform will provide an open standards based integration Bus with API Management, providing full API lifecycle management with governance and security.

12.0 Annexure- I: List of Locations

List of locations for Surveillance Cameras

S. No.	Name of Location	Total Cameras
East PS 12		
	Sarvodaya Cross	2
	Desai Cross	1

Court Cross	1
Brundavan Circle	1
K C Circle	1
Pinto	2
Chitagubbi Circle	1
Neligen Road Cross	1
Kamaripeth Cross	1
Gadag Road Under Bridge	1
North PS 14	
ACP Office Cross	1
Laxmi WI Bridge	1
Shanbhag Cross	1
MT Mill	1
Vanivillas Cros	1
Hosur	2
Mafsal Depot Cross	1
Akshay Parl Cross	1
Shirur Park Cross	1
Bhagat Singh Circle	1
Sharad Bhavan	1
Unkal Cross	1
Srinagar Cross	1
South PS 08	
Ganesh Peth Cross	1
New English Cross	1
Old HBL Durgad Bail	1
Bankapur Circle	2
Indi Pump	2
Ahimsa Circle Near Old Hubballi Durga Bail	1
East PS 02	
Kamaripeth PS Cross	1
Gadag Road Railway Under Bridge	1

North PS 05		
	Shirpur Park Cross	1
	Bhagat Singh Circle	1
	Sharada Bhavan	1
	Unkal Cross	1
	Shri Nagar Cross	1
South PS 01		
	Old Hubballi Durgad Bail	1
Dharwad PS 03		
	Saptapur Bhavi Cross	1
	DWD C. B. T. Bus Stop	1
	Kamat Hotel	1
Dharwad PS 12		
	Toll Naka Cross	2
	Court Cross	2
	Jublee Circle	2
	Vivekananda Cross	1
	Old SP Office Cross	1
	KCD Circle	1
	CBT Bus Stop	1
	Saptapur Bhavi Cross	1
	Kamat Hotel	1
	Total Surveillance Cameras	57

List of locations for Watch Towers

S. No.	Name of Location	Total Cameras
	East PS 02	
	Sarvodaya Circle	4
	KC Circle	4
	North PS 04	
	Shanbag Cross	4
	Kshya Park Cross	4
	Airport	4
	Akshya Colony	4
	South PS 10	
	New English School	4
	Bankapur Chowk	4
	Indi Pump	4
	Gabbur Bypass	4
	Nekar Nagr Circle	4
	Banatikatti Circle	4
	New Durgad Bail Circle	4
	Hubballi C. B. T.	4
	Mukeri Galli	4
	Dakappa Circle	4
	Dharwad PS 06	4
	Shivaji Circle	4
	Jublee Circle	4
	Tejashwini Nagr	4
	Line Bajar	4
	Bhusappa Chowk	4
	K. C. C. Circle	4

Total Watch Tower Cameras	88

List of Locations for SMART Parking & MLCP

Following is the list of locations for on-street parking:

Package No.	Road	Parking Stretch	Length	Pvt. Parking	Tendered Length	Vehicle Type
Package 2	Kopikkar Road	Kathariya Shop to Geetanjali Shop	48		48	Two wheeler
		Geetanjali Shop to Shri Tailar	108	8	100	Four wheeler
		Karavali Hotel Cross to Setlight Building	120		120	Four wheeler
		Setlight buidling to Axid Battery	50	9	41	Two wheeler
		Axid Battery to Vennessions Cross	76	4	72	Four wheeler
Package 3	Bradway	Metrani Building to Durgad bail Auto Stand	38		38	Four wheeler
Package 4	Coin Road	Kathariya Shop to New Sukhsagar Hotel	106		106	Two wheeler
		Shreyas Hospital to Sudarshan Takies	20		20	Two wheeler
Package 5	Durgad bail	Sarround Durgad bail circle	120		120	Four wheeler
Package 7	Station Road	Parag cross to Jain temple	60		60	Two wheeler
		Roopam Takies to Jain Temple	105	5	100	Four wheeler
		Jain Temple to Shrungar Taikes	105	10	95	Two wheeler
		Chandrakal	54		54	Four

		a Taikes to Ayanagar Bekary				wheeler
		Ayanagar Bekary to Onida Show room	50		50	Two wheeler
		Onida Show room to Sai Mobile Shop	36	6	30	Four wheeler
		Sai Mobile shop too Ganeshpet Police station	29		29	Two wheeler
		Ranajeet Trading Company to Niranjan Cycle Shop	46		46	Four wheeler
		Niranjan Cycle shop to Bakalegalli shop	46		46	Two wheeler
Package 9	Subhas Road	Gheesulal Shop to Rege shop	16		16	Two wheeler
		Gheesulal Shop opp	30		30	Four wheeler
		Busstand circle to Kandkur Shop cross	82		82	Two wheeler
		Marudar Aravatagi to Shivsagar hotel	34		34	Four wheeler
		Shahar police station gate to Police quarters gate	70		70	Four wheeler
		Super market first gate to Super market second gate	67		67	Four wheeler

		KCC bank to gandhi chowk	84		84	Two wheeler
		Naveen footwear to Vijayalaxmi gift centre	25		25	Four wheeler
		KCC bank to social library	60	10	50	Two wheeler
		Manisha saree centre to Kamat hotel	65		65	Two wheeler
		Silection center shop to Uday shooting shop	67		67	Four wheeler
		Mahendra kar Saree centre to Vernekar Jewlers	28		28	Two wheeler
		New show track to paste sweets shop	11		11	Two wheeler
		Shivsagar Hotel to Durga hotel	41		41	Two wheeler
Package 10	Railway station Road Dharawad	BDO office to court circle	152		152	Two wheeler
		BDO office to court circle	142		142	Two wheeler
	Laxmi Talkies Road	Laxmi talkies to Sangam circlle	123		123	Two wheeler
	SBI Road	Basappa Khanavali to Bhaigani samaj	85		85	Two wheeler
	cosmos club road	Court circle to kittel college road	45		45	Two wheeler

Following is the list of locations for MLCP:

Type of Parking	Location
Multi-level Car Parking	Court Circle

Following is the tentative list of locations for other (Off Street) Parking facilities:

Hubballi Junction Railway Station

Supermarket at Dharwad

Iconic Building

Janatha Bazaar

MG Market

Details about MLCP and Off Road parking is shown below:

Equipment Details	MLCP	Off - Street				
	Court Circle	Supermarket at Dharwad	Iconic Building	MG Market	Janata Bazaar	Railway Station
Entry Barrier	✓	✓	✓	✓	✓	✓
Exit Barrier	✓	✓	✓	✓	✓	✓
Handheld Ticketing Dispenser	✓	✓	✓	✓	✓	✓
Parking Sensors	✓	✓	✓	✓	✓	✓
Variable Messaging Board	✓	✓	✓	✓	✓	✓
Display and Guidance System	✓	×	×	×	×	×
Controllers	✓	✓	✓	✓	✓	✓
Emergency Call Boxes	✓	✓	✓	✓	✓	✓
Parking Management System	✓	✓	✓	✓	✓	✓
Integration with ICCC	✓	✓	✓	✓	✓	✓
Web Portal and Mobile Application Development	✓	✓	✓	✓	✓	✓

List of Potential Locations for SMART Poles

Sr. No	Location	Rationale
1	Glass House	Tourist Place
2	HDMC Hubballi	Public Building
3	Unkel Lake	Tourist Place
4	Tolankere lake	Tourist Place
5	court complex Hubballi	Public Building
6	Court Complex Dharwad	Public Building
7	DC Office	Public Building
8	Railway Station, Hubbali	Vibrant Corridor from Airport to Railway Station
9	Railway Station, Dharwad	Anticipated High Foot fall area
10	Ambedkar Circle	Vibrant Corridor from Airport to Railway Station
11	City Bus Stop Near Railway Station	Vibrant Corridor from Airport to Railway Station
12	In front of Lamington School	Vibrant Corridor from Airport to Railway Station
13	In front of HDMC	Vibrant Corridor from Airport to Railway Station
14	Mini Vidhana Soudha/Police Head Quarters	Vibrant Corridor from Airport to Railway Station
15	Chenamma Circle - Near Bus Stand	Vibrant Corridor from Airport to Railway Station
16	Chenamma Circle - opposite to Sai Mandir	Vibrant Corridor from Airport to Railway Station
17	Opposite old bus stand	Vibrant Corridor from Airport to Railway Station
18	Basava Vana	Vibrant Corridor from Airport to Railway Station
19	Swimming pool Complex-East	Vibrant Corridor from Airport to Railway Station
20	Traffic Light near IT Park	Vibrant Corridor from Airport to Railway Station
21	IT park	Vibrant Corridor from Airport to Railway Station
22	Hosur Junction	Vibrant Corridor from Airport to Railway Station
23	Near Bannimara stop, Gokul Road	Vibrant Corridor from Airport to Railway Station
24	Near KSRTC Depot	Vibrant Corridor from Airport to Railway Station
25	KSRTC Depot	Vibrant Corridor from Airport to Railway Station

Sr. No	Location	Rationale
26	KSRTC Bus stand (New)	Vibrant Corridor from Airport to Railway Station
27	Ravinagar Gokul Road	Vibrant Corridor from Airport to Railway Station
28	Ravinagar Gokul Road	Vibrant Corridor from Airport to Railway Station
29	Basaveshwarnagar	Vibrant Corridor from Airport to Railway Station
30	Manjunath Nagar Cross	Vibrant Corridor from Airport to Railway Station
31	Water Tank Nehru Nagar	Vibrant Corridor from Airport to Railway Station
32	Near Airport	Vibrant Corridor from Airport to Railway Station
33	Near Airport	Vibrant Corridor from Airport to Railway Station
34	Near Airport	Vibrant Corridor from Airport to Railway Station
35	Nehru Ground	Anticipated High Footfall area
36	Janta Market	Anticipated High Footfall area
37	MG Market	Anticipated High Footfall area
38	Supermarket at Dharwad	Anticipated High Footfall area
39	HDMC Office in Dharwad	Public Building
40	Ward No. 34, 35, 46, 36, 38, 39, 40, 56, 44, 41, 42, 43, 59	ABD Wards, hotspot to be installed outside ABD area
41	Ward No. : 1, 3, 17, 20, 22, 23, 24, 25, 28, 30, 31, 37, 48, 50, 63, 65, 66	Improvement and Development of the lives of all.
42	Rest of the 37 wards.	Improvement and Development of the lives of all.
43	BRTS Stations	headed by BRTS, anticipated high foot-fall area

RFP FOR SELECTION OF SYSTEM INTEGRATOR FOR IMPLEMENTATION OF CITY OPERATIONS CENTRE IN HUBBALLI-DHARWAD

Volume III: Master Service Agreement

RFP No. UDD/2017-18/IND45

HUBBALLI DHARWAD SMART CITY LIMITED

Table of Contents

A. General Conditions of Contract (GCC)

1. Definition of Terms

1.1. **"Agreement":** means this Master Services Agreement including the Terms and Conditions covered in Vol.I , Vol.II and Vol. III of RFP (Ref Nos……..and Corrigendum issued if any) & Scope of works, duration, SLA etc covered in the RFP.

1.2. "RFP" or "Request for Proposal" means the documents containing the Technical, Functional, Commercial and Legal Specifications for the implementation of the project issued in 3 Volumes (referred to as Volume I, Volume II and Volume III) and includes the clarifications, explanations and amendments issued from time to time.

1.3. "Effective Date" means the date on which this Contract is signed and executed by the parties hereto.

1.4. **"Applicable Law(s)"**Any statute, law, ordinance, notification, rule, regulation, judgment, order, decree, bye-law, approval, directive, guideline, policy, requirement or other governmental restriction or any similar form of decision applicable to the relevant party and as may be in effect on the date of the execution of this Agreement and during the subsistence thereof, applicable to the Project.

1.5. **"Authority"** means the Managing Director, Hubballi Dharwad Smart City Limited, Hubballi. The project shall be executed in Hubballi-Dharwad Municipal Corporation Area and shall be owned by Hubballi-Dharwad Smart City Limited and Hubballi-Dharwad Municipal Corporation.

1.6. "MSI" means the bidder who has been selected by the HDMC / HDSCL for the purpose of Establishment of Centralized Data Center and ICOP Platform.

1.7. **"LSI"** shall mean organization/consortium means the bidder who is selected by the Authority at the end of this RFPprocess. The agency shall carry out all the services mentioned in the scope of work of this RFP.

1.8. **"Contract"** means the Contract entered into by the parties with the entiredocumentation specified in the RFP.

1.9. **"Contract Value"** means the price payable to SI under this Contract for the fulland proper performance of its contractual obligations.

1.10. **"Commercial Off-The-Shelf (COTS)"** refers to software products that are ready-made and available for sale, lease, or license to the general public.

1.11. **"Data Centre Site"** means the Data Centre sites including their respective DataCentre space, wherein the delivery, installation, integration, management and maintenance services as specified under the scope of work are to be carried out for the purpose of this contract.

1.12. **"Document**" means any embodiment of any text or image however recorded andincludes any data, text, images, sound, voice, codes, databases or any other electronic documents as per IT Act 2000.

1.13. **"Effective Date"** means the date on which this Contract is signed executed by the parties hereto. If this Contract is executed in parts, then the date on which the last of such Contracts is executed shall be construed to be the Effective Date.

1.14. **"GCC"** means General Conditions of Contract

1.15. **"Goods"** means all of the equipment, sub-systems, hardware, software, productsaccessories, software and/or other material/items which SI is required to supply, install and maintain under the contract.

1.16. **"[COC]"** means City operational center, it is also termed as ICCC. The site for the same shall be informed to selected bidder.

1.17. **"Integrated Command and Control Center" or "ICCC"** means the center from where Hubballi-Dharwad Municipal Corporation would conduct centralized operations & surveillance on civil issues on the entire Hubballi-Dharwad City**.**

1.18. **"Intellectual Property Rights"** means any patent, copyright, trademark, tradename, service marks, brands, proprietary information whether arising before or after the execution of this Contract and the right to ownership and registration of these rights.

1.19. **"Go- Live"** means commissioning of project after commencement of all smart city components, including training as per scope of work mentioned in RFP. Bidder should have the approval from Authority for user acceptance testing.

1.20. **"Notice"** means: a notice; or a consent, approval or other communication required to be in writing under this Contract.

1.21. **"OEM"** means the **Original Equipment Manufacturer of any equipment/system/software/product** which are providing such goods to the Authorityunder the scope of this RFP**.**

1.22. **"LSI's Team"** means LSI who has to provide goods & services to the Authority underthe scope of this Contract. This definition shall also include any and/or all of the employees of SI, authorized service providers/partners and representatives or other personnel employed or engaged either directly or indirectly by SI for the purposes of this Contract.

1.23. **"Consortium"** means the entity named in the contract for any part of the work hasbeen sublet with the consent in writing of the Authority and the heirs, legal representatives, successors and assignees of such person.

1.24. "**Replacement Service Provider**" means the organization replacing SI in case of contract termination for any reasons

1.25. "**Sub-Contractor**" shall mean the entity named in the contract for any part of thework or any person to whom any part of the contract has been sublet with the consent in writing of the Authority and the heirs, legal representatives, successors and assignees of such person.

1.26. **"SCC"** means Special Conditions of Contract.

1.27. **"Services"** means the work to be performed by the agency pursuant to this RFPand to the contract to be signed by the parties in pursuance of any specific assignment awarded by the Authority.

1.28. "Confidential Information" means all information including Authority Project Data (whether in written, oral, electronic or other format) which relates to the technical, financial and business affairs, customers, suppliers, products, developments, operations, processes data, trade secrets, design rights, know-how and personnel of each Party and its affiliates which is disclosed to or otherwise learned by the other Party(whether a Party to this Agreement) in the course of or in connection with this Agreement(including without limitation such information received during negotiations, location visits and meetings in connection with this Agreement);

1.29. "Authority Project Data" means all proprietary data of Authority's Project generated out of the transactions, documents and related information including but not restricted to user data which MSI obtains, possesses or processes in the context of providing the Services to the users pursuant to this Agreement.

1.30. "Quarterly Payment (QP)" means fees that the LSI may be entitled to be paid by the Authority on the quarterly basis for the services rendered during Operation and Maintenance Phase. However, the QP to be paid would be calculated by deducting penalties for breach of SLAs from QP.

1.31. "Services" means the services to be delivered to the Authority as specified in the RFP, using the tangible and intangible assets created, procured, installed, managed and operated by the MSI including the tolls of information and communication technology specified in the RFP.

1.32. "Service Level" means the level of service and other performance criteria which will apply to the services and as set out in the SLA;

1.33. "Service Level Agreement (SLA) means the Implementation SLA and Operation and Maintenance SLA, executed by and between the parties and forming part of this agreement.

1.34. "Implementation Phase" shall mean and cover the implementation of the deliverables as specified and more fully mentioned in the VolII of the RFP.

1.35. "Operation and Maintenance Phase" shall mean and cover the Post Implementation deliverables as specified and more fully mentioned in the VolII of the RFP for a period of 9 months, unless terminated earlier.

1.36. **"Acceptance of System"** The system shall be deemed to have been accepted by the Authority, subsequent to its installation, rollout and deployment of trained manpower, when all the activities as defined in Scope of Work have been successfully executed and completed to the satisfaction of Authority or when the authority uses the deliverables for its intended use, whichever is earlier. Refer Section 5 of RFP Volume II.

1.37. "Proprietary Information" means processes, methodologies and technical and business information, including drawings, designs, formulas, flow c09harts, data and computer

programs already owned by, or granted by third parties to the MSI hereto during the term of the agreement.

1.38. "Intellectual Property Rights" means any patent, copyright, trademark, trade name, service marks, brands, proprietary information whether arising before or after the execution of this Contract and the right to ownership and registration of these rights.

1.39. MTTR: Mean Time to Repair means it is the minimum time to repair/replace the faulty hardware, software and applications, in hrs. The MTTR shall not exceed the hours stated in SLA from the time the complaint is logged. MTTR would be calculated as per the logs maintained in the EMS at KMDS DataCenter.

1.40. Mean time to repair (MTTR) hardware, software and applications: MTTR is the period of time between the time of opening the Trouble ticket and closing the Trouble ticket on service restoration. It is inclusive of travel time and restoration time. MTTR =Travel time +Restoration time.

1.41. Business Day: Services of Centralized DataCenter and ICOP shall be available 24X7.

2. Interpretation

2.1. In this Contract unless a contrary intention is evident:

a. the clause headings are for convenient reference only and do not form part of this Contract;

b. unless otherwise specified a reference to a clause number is a reference to all of its sub-clauses;

c. the word "include" or "including" shall be deemed to be followed by "without limitation" or "but not limited to" whether or not they are followed by such phrases;

d. 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;

e. a word in the singular includes the plural and a word in the plural includes the singular;

f. a word importing a gender includes any other gender;

g. a reference to a person includes a partnership and a body corporate;

h. a reference to legislation includes legislation repealing, replacing or amending that legislation;

i. Where a word or phrase is given a particular meaning it includes the appropriate grammatical forms of that word or phrase which have corresponding meanings.

j. In the event of an inconsistency between the terms of this Contract and the RFP and the Bid, the terms hereof shall prevail.

3. STRUCTURE

3.1. This Agreement shall operate as a legally binding services agreement specifying the master terms which apply to the Parties under this Agreement and to the provision of the Services by the MSI to the Authority under the SLA.

In the event of a change of Control of the LSI during the Agreement, LSI shall promptly notify the Authority of the same and in the event that the net worth of the surviving entity is less than that of LSI prior to the change of Control, the Authority may within 30 days of his/her becoming aware of the change in control, require a replacement of existing Project Performance Guarantee furnished by the LSI from a guarantor acceptable to the Authority (which shall not be LSI or any of its associated entities). If such a guarantee cannot be obtained within 30 days of the Authority becoming aware of the change in Control, he/she may exercise his right to terminate this Agreement within a further 30 days by written notice, to become effective when specified in such notice. Pursuant to termination, the consequences of termination as set out in Section B, Clause 39 Liquidated Damages of the RFP will become effective. The internal reorganization of the LSI shall not be deemed as event of a change of Control for purposes of this clause unless the surviving entity is of less net worth than the predecessor entity.

4. Conditions Precedent

This Contract is subject to the fulfillment of the following conditions precedent by SI.

4.1. Furnishing by LSI, an unconditional and irrevocable Performance Bank Guarantee i.e. IPBG of 10% of the Total Capex price contract towards the Implementation phase and OPBG 10% of the Total OPEX price (as mentioned in the para 4.3 **Performance Bank Guarantee (PBG)** of RFP Volume I) and acceptable to the Authority which would remain valid until such time as stipulated by the Authority.

4.2. Obtaining of all statutory and other approvals required for the performance of the Services under this Contract. This may include approvals/clearances, wherever applicable, that may be required for execution of this contract e.g. clearances from Government authorities for importing equipment, exemption of Tax/Duties/Levies, work permits/clearances for LSI's team, etc.

4.3. Furnish notarized copies of any/all contract(s) duly executed by LSI and its OEMs existing, at the time of signing of this contract in relation to the Authority's project.

4.4. Furnishing of such other documents as the Authority may specify/ demand.

4.5. The Authority reserves the right to waive any or all of the conditions specified in Clause 4.3 above in writing and no such waiver shall affect or impair any right, power or remedy that the Authority may otherwise have.

4.6. In the event that any of the conditions set forth in Clause 4.3 herein above are not fulfilled within 1 months from the date of this Contract, or such later date as may be mutually agreed upon by the parties, the Authority may terminate this Contract.

4.7. In case there is a contradiction between the sections, the below hierarchy of sections in order of precedence :

1 Pre-bid clarification and Corrigendum, if any
2 Volume III of RFP (SCC holds precedence over GCC)
3 Section 1 and 2 of RFP volume II
4 Section 4 of RFP volume II
5 RFP volume I

4.8. In the event that any of the Conditions Precedent not been fulfilled and the same has not been waived by either Party fully or partially, this Agreement shall cease to have any effect as of that date

4.9. Instead of terminating this Agreement as provided in paragraph above, the Parties may extend the time for fulfilling the Conditions Precedent and the Term of this Agreement by mutual agreement.

5. Scope of work

5.1. Scope of the work shall be as defined in **RFP Volume II** and Annexures thereto of the tender.

5.2. Authority has engaged LSI to provide services related to implementation of Hubballi DharwadSmart City solutions using which the Authority intends to perform its business operations. LSI is required to provide such goods, services and support as the Authority may deem proper and necessary, during the term of this Contract, and includes all such processes and activities which are consistent with the proposals set forth in the Bid, the Tender and this Contract and are deemed necessary by the Authority, in order to meet its business requirements (hereinafter 'scope of work').

6. Commencement and duration of this agreement

This Agreement shall come into effect on _____2018 (hereinafter called the "Effective Date") and cover the Implementation Phase and the Operation and Maintenance Phase. The Operation and Maintenance Phase shall last for a period of 5 years from the date of Go-Live, subject to fulfilment of the rights and obligations of the parties under the Agreement.

7. Key Performance Measurements

7.1. Unless specified by the Authority to the contrary, SI shall deliver the goods, 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 AgreementSection of this RFP.

7.2. The Authority reserves the right to amend any of the terms and conditions in relation to the Contract / Service Specifications and may issue any such directions which are not necessarily stipulated therein if it deems necessary for the fulfilment of the Schedule of Requirements.

8. Commencement and Progress

8.1. LSI shall subject to the fulfillment of the conditions precedent above, commence the performance of its obligations in a manner as per the Scope of Work (RFP Volume II).

8.2. LSI 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.

8.3. LSI shall be responsible for and shall ensure that all activities/services areperformedinaccordancewiththeContract, Scope ofWorkand Technical Specifications and functional requirements and that LSI's Team complies with such Specifications and all other standards, terms and other stipulations/conditions set out hereunder.

9. Standards of performance

9.1. LSI shall perform the Services and carry out its obligations under the Contract with due diligence, efficiency and economy, in accordance with generally accepted techniques and best practices used in the industry and with IT standards recognized by international professional bodies and shall observe sound management, engineering and security practices. It shall employ appropriate technology and engineering practices and safe and

effective equipment, machinery, material and methods. LSI shall always act, in respect of any matter relating to the Contract, as faithful advisors to the Authority and shall, at all times, support and safeguard the Authority's legitimate interests in any dealings with Third Parties.

10. Approvals and Required Consents

10.1. The Authority shall extend necessary support to LSI to obtain, maintain and observe all relevant and customary regulatory and governmental licenses, clearances and applicable approvals (hereinafter the "Approvals") necessary for LSI to provide the Services. The costs of such Approvals shall be borne by LSI. Both parties shall give each other all co-operation and information reasonably.

10.2. The Authority shall also provide necessary support to Bidder in obtaining the Approvals. In the event that any Approval is not obtained, LSI and the Authority shall co-operate with each other in achieving a reasonable alternative arrangement as soon as reasonably practicable for the Authority, to continue to process its work with as minimal interruption to its business operations as is commercially reasonable until such Approval is obtained, provided that LSI shall not be relieved of its obligations to provide the Services and to achieve the Service Levels until the Approvals are obtained if and to the extent that LSI 's obligations are dependent upon such Approvals.

11. Constitution of Consortium

11.1. For the purposes of fulfillment of its obligations as laid down under the Contract, where the Authority deems fit and unless the contract requires otherwise, Lead Bidder shall be the sole point of interface for the Authority and would be absolutelyaccountable for the performance of its own, the other member of Consortium and/or its Team's functions and obligations.

11.2. The Consortium member/members has agreed that the lead bidder of the Consortium is the prime point of contact between the Consortium and the Authority and it shall be primarily responsible for the discharge and administration of all the obligations contained herein and, the Authority, unless it deems necessary shall deal only with Lead Bidder of the Consortium. The Lead Bidder shall be and solely responsible for the project execution/ The Lead Bidder along with all the Members of the consortium shall be Jointly responsible for the project execution

11.3. Without prejudice to the obligation of the Consortium member to adhere to and comply with the terms of this Contract, the Consortium member has executed and submitted a Power of Attorney in favor of lead bidder authorizing him to act for and on behalf of such member of the Consortium and do all acts as may be necessary for fulfillment of contractual obligations.

11.4. No agreement/contract executed within the consortium members be amended, modified and/or terminated without the prior written consent of the Authority. An executed copy of each of such agreements/contracts shall, immediately upon execution be submitted by LSI to the Authority. The Authority reserves the right to review, approve and require amendment of the terms of the Consortium Contract or any contract or agreements entered into by and between the members of such Consortium.

11.5. Where, during the term of this Contract, in case LSI terminates any contract/arrangement or agreement relating to the performance of Services, LSI shall be responsible and severally liable for any consequences resulting from such termination. LSI shall in such case ensure the smooth continuation of Services by providing a suitable replacement to the satisfaction of the Authority at no additional charge and at the earliest opportunity.

12. LSI's Obligations

12.1. LSI's obligations shall include all the activities as specified by the Authority in the Scope of Work and other sections of the RFP and Contract and changes as mutually agreed by both parties, thereof, enable Authority to meet the objectives and operational requirements. It shall be LSI's responsibility to ensure the proper and successful implementation, performance and continued operation of the proposed solution in accordance with and in strict adherence to the terms of his Bid, the RFP and this Contract.

12.2. In addition to the aforementioned, LSI shall provide services to manage and maintain the said system and infrastructure as mentioned in RFP Volume II

12.3. Authority reserves the right to interview the personnel proposed that shall be deployed as part of the project team. If found unsuitable, the Authority may reject the deployment of the personnel. However, ultimate responsibility of the project implementation shall lie with LSI.

12.4. Authority reserves the right to require changes in personnel, which shall be communicated to LSI. LSI with the prior approval of the Authority may make additions to the project team. LSI shall provide the Authority with the resume of Key Personnel and provide such other information as the Authority may reasonably require. The Authority also reserves the right to interview the personnel and reject, if found unsuitable. In case of change in its team members, for any reason whatsoever, LSIShall also ensure that the exiting members are replaced with at least equally qualified and professionally competent members.

12.5. LSI shall ensure that none of the Key Personnel (refer Section 3.4.3 of the RFP Volume I proposed) and manpower exit from the project during first 6 months of the beginning of the project. In such cases of exit (except for medical reason/death), a penalty of an amount INR 2 lakhs per such replacement shall be paidbyLSI.

12.6. LSI should submit profiles of only those resources who shall be deployed on the project. Any change of resource should be approved by the Authority and replaced with equivalent or better resource. The Authority may interview the resources suggested by SI before their deployment on board. It does not apply in case of change requested by the Authority.

12.7. In case of change in its team members, LSI shall ensure a reasonable amount of time overlap in activities to ensure proper knowledge transfer and handover/takeover of documents and other relevant materials between the outgoing and the new member.

12.8. LSI shall ensure that LSI's Team is competent, professional and possesses the requisite qualifications and experience appropriate to the task they are required to perform under

this Contract. LSI shall ensure that the services are performed through the efforts of LSI's Team, in accordance with the terms hereof and to the satisfaction of the Authority. Nothing in this Contract relieves LSI from its liabilities or obligations under this Contract to provide the Services in accordance with requirements and as stated in this Contract and the bid to the extent accepted by the Authority and LSI shall be liable for any non-performance, non-compliance, breach or other loss and damage resulting either directly or indirectly by or on account of its team.

12.9. LSI shall be fully responsible for deployment/installation/development and integration of all the software and hardware components supplied under the scope of this RFP and resolve any problems/issues that may arise due to integration of components.

12.10. LSI shall ensure that the OEMs supply equipment/components (including associated accessories and software) are available and shall ensure installation, commissioning, integration and maintenance of these components during the entire period of contract.LSI shall ensure that the respective OEMs supply the concerned software applications and shall support LSI in the installation/deployment, integration, roll-out and maintenance of these applications during the entire period of contract. It must clearly be understood by LSI that warranty and O&M of the system, products and services incorporated as part of system would commence from the day of Go-Live of system as a complete Smart city solutions including all the solutions proposed. LSI would be required to explicitly display that he/they have a back to back arrangement for provisioning of Warranty/AMC/O&M support till the end of contract period with the relevant OEMs and the same needs to be submitted along the Technical Bid (for the Warranty Period) as per the requirements.. The annual maintenance support shall include patches and updates the software, hardware components and other devices.

12.11. All the software licenses that SI proposes should be perpetual software licenses. The software licenses shall not be restricted based on location and the Authority should have the flexibility to use the software licenses for other requirements if required.

12.12. All the OEMs that Bidder proposes should have Dealer/Manufacturer possession licenses.

12.13. TheAuthority reserves the right to review the terms of the Warranty and AnnualMaintenance agreements entered into between SI and OEMs and no such agreement/contract shall be executed, amended, modified and/or terminated without the prior written consent of the Authority. An executed copy of each of such agreements/contracts shall, be submitted along with Technical Bid or immediately upon execution (for the AMC Period) be submitted by LSI to the Authority.

12.14. LSI shall ensure that none of the components and sub-components as proposed in their Technical Bid is declared end-of-sale or end-of-life by the respective OEMs for a period of 5 years and end-of-support for a period of 8 years from the date of Go-Live. If the OEM declares any of the products/solutions end-of-sale subsequently, the LSI shall ensure that the same is supported by the respective OEM for contract period.

12.15. If a product is de-supported by the OEM for any reason whatsoever, from the date of Acceptance of the System till the end of contract, LSI should replace the products/solutions with an alternate that is acceptable to the Authority at no additional cost to the Authority and without causing any performance degradation.

12.16. The Licenses of all the Hardware, Software ,Operating systems, Data Bases , system Software, COTS Software Product procured under this contract will be in the name of Authority only.

12.17. LSI shall ensure that the OEMs provide the support and assistance to LSI in case ofany problems/issues arising due to integration of components supplied by him with any other component(s)/product(s) under the purview of the overall solution. If the same is not resolved for any reason whatsoever, LSI shall replace the required component(s) with an equivalent or better substitute that is acceptable to Authority without any additional cost to the Authority and without impacting the performance of the solution in any manner whatsoever.

12.18. LSI shall ensure that the OEMs for hardware servers/equipment supply and/or installall type of updates, patches, fixes and/or bug fixes for the firmware or software from time to time at no additional cost to the Authority.

12.19. LSI shall ensure that the OEMs for hardware servers/equipment or LSI's trainedengineers conduct the preventive maintenance on a Quarterly basis and break-fix maintenance in accordance with the best practices followed in the industry.

12.20. LSI shall ensure that the documentation and training services associated with the components shall be provided by the OEM partner or OEM's certified training partner without any additional cost to the Authority.The training has to be conducted using official OEM course curriculum mapped withthe hardware/Software Product's to be implemented in the project.

12.21. LSI and their personnel/representative shall not alter/change/replace any hardwarecomponent proprietary to the Authority and/or under warranty or O&M of third party without prior consent of the Authority.

12.22. LSI shall provision the required critical spares/components at the designatedDatacenter Sites/office locations of the Authority for meeting the uptime commitment of the components supplied by him.

12.23. LSI's representative(s) shall have all the powers requisite for the execution of scopeof work and performance of services under this contract. LSI's representative(s) shall liaise with the Authority's representative for the proper coordination and timely completion of the works and on any other matters pertaining to the works. LSI shall extend full co-operation to Authority's representative in the manner required by them for supervision/inspection/observation of the equipment/goods/material, procedures, performance, progress, reports and records pertaining to the works. Heshall also have complete charge of LSI's personnel engaged in the performance of the works and to ensure compliance of rules, regulations and safety practice. LSI shall also cooperate with the other Service Providers/Vendors of the Authority working at the Authority's office locations & field locations and DC& DR sites of KMDS.

12.24. LSI shall be responsible on an ongoing basis for coordination with other vendors andagencies of the Authority in order to resolve issues and oversee implementation of the same. LSI shall also be responsible for resolving conflicts between vendors in case of borderline integration issues.

12.25. LSI is expected to set up a project office inHubballi Dharwad City. The technical manpower deployedon the project should work from the same office. However, some resources may be required to work at the KMDS DC during the contract period.

13. Access to Sites

13.1. Sites would include the following

- Server Room, Command and Communications Center at the Hubballi Dharwad
- Implementation Locations for the Cameras as identified.
- The Centralized Data Center at KMDS, Rajajinagar, Bengaluru.

13.2. The Authority's representative upon receipt of request from LSI intimating commencement of activities at various locations shall give to LSI access to as much of the Sites as may be necessary to enable LSI to commence and proceed with the installation of the works in accordance with the program of work. Any reasonable proposal of LSI for access to Site to proceed with the installation of work in accordance with the program of work shall be considered for approval and shall not be unreasonably withheld by the Authority. Such requests shall be made to the Authority's representative in writing at least 7 days prior to start of the work.

14. Start of Installation

14.1. LSI shall co-ordinate with the Authority and stakeholders for the complete setup of sites before commencement of installation of other areas as mentioned RFP Volume II document. LSI shall also co-ordinate regarding Network / Bandwidth connectivity in order to prepare the installation plan and detailed design / architectural design documents.

14.2. As per TRAI guidelines, resale of bandwidth connectivity is not allowed

14.3. The plan and design documents thus developed shall be submitted by LSI for approval by the Authority.

14.4. After obtaining the approval from the Authority, LSI shall commence the installation.

15. Reporting Progress

15.1. LSI shall monitor progress of all the activities related to the execution of this contract and shall submit to the Authority, progress reports with reference to all related work, milestones and their progress during the implementation phase.

15.2. Formats for all above mentioned reports and their dissemination mechanism shall be discussed and finalized along with project plan. The Authority on mutual agreement between both parties may change the formats, periodicity and dissemination mechanism for such reports.

15.3. Periodic meetings shall be held between the representatives of the Authority and LSI once in every 15 days during the implementation phase to discuss the progress of implementation. After the implementation phase is over, the meeting shall be held as an ongoing basis, as desired by Authority, to discuss the performance of the contract.

15.4. SI shall ensure that the respective solution teams involved in the execution of work are part of such meetings.

15.5. Several review committees involving representative of the Authority and senior officials of LSI shall be formed for the purpose of this project. These committees shall meet at intervals, as decided by the Authority later, to oversee the progress of the implementation.

15.6. All the goods, services and manpower to be provided/deployed by LSI under the Contract and the manner and speed of execution and maintenance of the work and services are to be conducted in a manner to the satisfaction of Authority's representative in accordance with the Contract.

15.7. The Authority reserves the right to inspect and monitor/assess the progress/performance of the work/services at any time during the course of the Contract. The Authority may demand and upon such demand being made, LSI shall provide documents, data, material or any other information which the Authority may require, to enable it to assess the progress/performance of the work/service.

15.8. At any time during the course of the Contract, the Authority shall also have the right to conduct, either itself or through another agency as it may deem fit, an audit to monitor the performance by LSI of its obligations/functions in accordance with the standards committed to or required by the Authority and LSI undertakes to cooperate with and provide to the Authority/any other agency appointed by the Authority, all Documents and other details as may be required by them for this purpose. Such audit shall not include LSI's books of accounts.

15.9. Should the rate of progress of the works or any part of them at any time fall behind the stipulated time for completion or is found to be too slow to ensure completion of the works by the stipulated time, or is in deviation to Tender requirements/standards, the Authority's representative shall so notify LSI in writing.

15.10. LSI shall reply to the written notice giving details of the measures he proposes to take to expedite the progress so as to complete the works by the prescribed time or to ensure compliance to RFP requirements. LSI shall not be entitled to any additional payment for taking such steps. If at any time it should appear to the Authority or Authority's representative that the actual progress of work does not conform to the approved plan LSI shall produce at the request of the Authority's representative a revised plan showing the modification to the approved plan necessary to ensure completion of the works within the time for completion or steps initiated to ensure compliance to the stipulated requirements

15.11. The submission seeking approval by the Authority or Authority's representative of such plan shall not relieve LSI of any of his duties or responsibilities under the Contract.

15.12. In case during execution of works, the progress falls behind schedule or does not meet the Tender requirements, LSI shall deploy extra manpower/resources to make up the progress or to meet the RFP requirements. Plan for deployment of extra man power/resources shall be submitted to the Authority for its review and approval. All time and cost effect in this respect shall be borne, by LSI within the contract value.

16. Project Plan

16.1. Within 15 calendar days of effective date of the contract/Issuance of WO, LSI shall submit to the Authority for its approval a detailed Project Plan with details of theProject showing the sequence, procedure and method in which he proposes to carry out the works. The Plan so

submitted by LSI shall conform to the requirements and timelines specified in the Contract. The Authority and LSI shall discuss and agree upon the work procedures to be followed for effective execution of the works, which LSI intends to deploy and shall be clearly specified. The Project Plan shall include but not limited to project organization, communication structure, proposed staffing, roles and responsibilities, processes and tool sets to be used for quality assurance, security and confidentiality practices in accordance with industry best practices, project plan and delivery schedule in accordance with the Contract. Approval by the Authority's Representative of the Project Plan shall not relieve LSI of any of his duties or responsibilities under the Contract.

16.2. If LSI's work plans necessitate a disruption/shutdown in Authority's operation including the Centralized Data Center Operation at KMDS, the plan shall be mutually discussed and developed so as to keep such disruption/shutdown to the barest unavoidable minimum. Any time and cost arising due to failure of LSI to develop/adhere such a work plan shall be to his account.

17. Adherence to safety procedures, rules regulations and restriction

17.1. LSI's Team shall comply with the provision of all laws including labor laws, rules, regulations and notifications issued there under from time to time. All safety and labor laws enforced by statutory agencies and by Authority shall be applicable in the performance of this Contract and LSI's Team shall abide by these laws.

17.2. Access to the Data Center, Command and Control Centre / City Operation Center shall be strictly restricted. No access to any person except the essential members of LSI's Team who are authorized by the Authority and are genuinely required for execution of work or for carrying out management/maintenance shall be allowed entry. Even if allowed, access shall be restricted to the pertaining equipment of the Authority only. LSI shall maintain a log of all activities carried out by each of its team personnel.

17.3. No access to any staff of bidder, except the essential staff who has genuine work-related need, should be given. All such access should be logged in a loss free manner for permanent record with unique biometric identification of the staff to avoid misrepresentations or mistakes

17.4. LSI shall take all measures necessary or proper to protect the personnel, work and facilities and shall observe all reasonable safety rules and instructions. LSI's Team shall adhere to all security requirement/regulations of the Authority during the execution of the work. Authority's employee also shall comply with safety procedures/policy.

17.5. LSI shall report as soon as possible any evidence, which may indicate or is likely to lead to an abnormal or dangerous situation and shall take all necessary emergency control steps to avoid such abnormal situations.

18. Statutory Requirements

18.1. During the tenure of this Contract nothing shall be done by LSI or his team including consortium in contravention of any law, act and/or rules/regulations, there under or any amendment thereof governing inter-alia customs, stowaways, foreign exchange etc. and shall keep Authority indemnified in this regard.

19. Authority's Obligations

19.1 Authority or his/her nominated representative shall act as the nodal point for implementation of the contract and for issuing necessary instructions, approvals, commissioning, acceptance certificates, payments etc. to LSI.

19.2 Authority shall ensure that timely approval is provided to LSI as and when required, which may include approval of project plans, implementation methodology, design documents, specifications, or any other document necessary in fulfillment of this contract.

19.3 The Authority's representative shall interface with LSI, to provide the required information, clarifications, and to resolve any issues as may arise during the execution of the Contract. Authority shall provide adequate cooperation in providing details, coordinating and obtaining of approvals from various governmental agencies, in cases, where the intervention of the Authority is proper and necessary.

19.4 Authority may provide on Bidder's request, particulars/information/or documentation that may be required by LSI for proper planning and execution of work and for providing services covered under this contract and for which LSI may have to coordinate with respective vendors.

20. Payments

20.1 Authority shall make payments to LSI in line with the awarded amount as mentioned in LOI after deduction of Penalties and those undelivered services if any.

20.2 Authority shall make payments to LSI at the times and in the manner set out in the Payment schedule as specified in Payment Milestones referred to in RFP Volume II subject to the deduction of liquidated damages as mentioned under Clause 39 of Section B and subject to the penalties as mentioned under Clause 61 of Section B. Authority shall make all efforts to make payments to SI within 60 days of receipt of undisputed, valid and due and payable invoice(s) and all necessary supporting documents.

20.3 LSI shall ensure to submit the following indicative supporting documents (but not exhaustive) required at different Phases for considering release of the payments by the Authority.

No.	Scope of Work	Timelines	Payment
1.	Upon finalization of SRS, FRS & SDD	T+2 months	10% of the Total Capex Value
2.	Phase I operationalization & Go-Live	T + 9 months	90% of the Phase I capex value
2a	Goods / Product Delivery for Phase I	T + 9 months	60%
2b	Phase I Operationalization & Go Live		40%

No.	Scope of Work	Timelines	Payment
3	Phase II operationalization & Go-Live	T+15 months	20% Of the contract Value
3a	Goods / Product Delivery for Phase II	T+15 months	60%
3b	Phase II Operationalization & Go Live		40%
4	Operations & Maintenance phase for a period of 60 months from the date of Go Live of phase I	T1 + 60 months	OPEX Value in equal quarterly instalments

20.4 Authority shall pay the applicable GST on the Goods & Services under the existing, amended or enacted laws during life of this contract on production of actual invoices and requisite GST Returns.

20.5 No invoice for extra work on account of change order shall be submitted by LSI unless the said extra work/change order has been authorized/approved by the Authority in writing in accordance with Change Control Note (Annexure I Volume III of this section of the RFP)

20.6 In the event of Authority noticing at any time that any amount has been disbursed wrongly to LSI or any other amount is due from LSI to the Authority, the Authority may without prejudice to its rights recover such amounts by other means after notifying LSI or deduct such amount from any payment falling due to LSI. The details of such recovery, if any, shall be intimated to SI. LSI shall receive the payment of undisputed amount under subsequent invoice for any amount that has been omitted in previous invoice by mistake on the part of the Authority or LSI.

20.7 All payments to SI shall be subject to the deductions of tax at source under Income Tax Act, and other taxes and deductions as provided for under any law, rule or regulation. All costs, damages or expenses which Authority may have paid or incurred, for which under the provisions of the Contract, LSI is liable, the same shall be deducted by Authority from any dues to LSI. All payments to LSI shall be made after making necessary deductions as per terms of the Contract and recoveries towards facilities, if any, provided by the Authority to LSI on chargeable basis.

20.8 Authority shall be entitled to delay or withhold payment of any invoice or part of it delivered by the LSI under this clause where the Authority's disputes such invoice or part limited to that which is in dispute. Any exercise by the Authority under this Article shall not entitle the LSI to delay or withhold provision of the Services.

20.9 Authority shall be entitled to delay or withhold payment of any invoice or part of it delivered by the MSI under this clause where Authority disputes any previous invoice or part of it that it had not previously disputed under Clause 26 of this Volume provided that such dispute is bona fide. Any exercise by the Authority under this Clause shall not entitle the LSI to delay or withhold provision of the services.

21. Intellectual Property Rights

21.1. Retention of Ownership except for the rights expressly granted to the LSI under this Agreement, the authority shall retain all right, title and interest in and to the Licensed Technology, including all worldwide Technology and intellectual property and proprietary rights.

21.2. LSI must ensure that while using any software, hardware, processes, document or material in the course of performing the Services, it does not infringe the Intellectual Property Rights of any person/Company. LSI shall keep the Authority indemnified against all costs, expenses and liabilities howsoever, arising out any illegal or unauthorized use (piracy) or in connection with any claim or proceedings relating to any breach or violation of any permission/license terms or infringement of any Intellectual Property Rights by LSI or LSI's Team during the course of performance of the Services. LSI's liability is excluded regarding any claim based on any of the following

(a) anything Authority provides which is incorporated into the Solution;

(b) the Authority's modification of the solution;

(c) the combination, operation, or use of the solution with other materials, if the third party claim has been caused by the combination, operation or use of the solution.

21.3. Authority shall own and have a right in perpetuity to use all newly created Intellectual Property Rights which have been developed solely during execution of this Contract, including but not limited to all processes, products, specifications, reports and other documents which have been newly created and developed by LSI solely during the performance of Services and for the purposes of inter-alia use or sub-license of such Services under this Contract. LSI undertakes to disclose all such Intellectual Property Rights arising in performance of the Services to the Authority,execute all such agreements/documents and obtain all permits and approvals that may be necessary in regard to the Intellectual Property Rights of the Authority.

21.4. If Authority desires, SI shall be obliged to ensure that all approvals, registrations, licenses, permits and rights etc. which are inter-alia necessary for use of the goods supplied/installed by LSI, the same shall be acquired in the name of the Authority, prior to termination of this Contract and which may be assigned by the Authority to LSI for the purpose of execution of any of its obligations under the terms of the Bid, Tender or this Contract. However, subsequent to the term of this Contract, such approvals, registrations, licenses, permits and rights etc. shall endure to the exclusive benefit of the Authority.

21.5. LSI shall not copy, reproduce, translate, adapt, vary, modify, disassemble, decompile or reverse engineer or otherwise deal with or cause to reduce the value of the Materials except as expressly authorized by Authority in writing.

22. Taxes

22.1 LSI shall bear all personnel taxes levied or imposed on its personnel, or any other member of LSI's Team, etc. on account of payment received under this Contract. LSI shall bear all corporate taxes, levied or imposed on LSI on account of payments received by it from the Authority for the work done under this Contract.

22.2 LSI shall bear all taxes and duties etc. levied or imposed on LSI under the Contract. It shall be the responsibility of LSI to submit to the concerned Indian authorities the returns and all other connected documents required for this purpose. LSI shall also provide the Authority such information, as it may be required in regard to LSI's details of payment made by the Authority under the Contract for proper assessment of taxes and duties. The amount of tax withheld by the Authority shall at all times be in accordance with Indian Tax Law and the Authority shall promptly furnish to LSI original certificates for tax deduction at source and paid to the Tax Authorities.

22.3 LSI agrees that he shall comply with the Indian Income Tax Act in force from time to time and pay Indian Income Tax, as may be imposed/levied on them by the Indian Income Tax Authorities, for the payments received by them for the works under the Contract

22.4 LSI shall fully familiarize themselves about the applicable taxes (such asGST, duties, fees, levies, etc.) on amounts payable by the Authority under the Agreement. All such taxes rates must be submitted by Bidders separately as per the format 7.13 of Volume I of the RFP.The LSI to provide the prices of the components exclusive of all such taxes in the financial proposal.

22.5 LSI shall indemnify Authority against any and all liabilities or claims arising out of this Contract for such taxes including interest and penalty by any such Tax Authority may assess or levy against the Authority/LSI.

23. Indemnity

23.1 LSI shall indemnify the Authority from and against any costs, loss, damages, expense, claims including those from third parties or liabilities of any kind howsoever suffered, arising or incurred inter alia during and after the Contract period out of:

(i) any gross full or willful misconduct act or omission by LSI or any third party associated with LSI in connection with or incidental to this Contract; or
(ii) Breach of any terms of MSI's bid as agreed, the RFP and this Contract by MSI
(iii) any infringement of patent, trademark/copyright or industrial design rights arising from the use of the supplied goods and related services or any part thereof

23.2 LSI shall also indemnify the Authority against any privilege, claim or assertion made by a third party with respect to right or interest in, ownership, mortgage or disposal of any asset, property etc.

23.3 Regardless of anything contained (except for LSI's liability for bodily injury and/ or damage to tangible and real property for which it is legally liable and it's liability for patent and copyright infringement in accordance with the terms of this Agreement) the

total liability of LSI, is restricted to the total value of the contract and LSI is not responsible for any third party claims.

24. Warranty

24.1 A comprehensive warranty applicable on goods supplied under this contract shall be provided by the LSI for the period of 3 years and Comprehensive AMC of 2 years from the date of acceptance of respective system by the Authority.

24.2 Technical Support for H/W Components, Relevant System Software & Applications shall be provided by the respective OEMs for the period of contract. The Technical Support should include all upgrades, updates and patches to the respective components.

24.3 The LSI warrants that the Goods supplied under the Contract are new, non-refurbished, unused and recently manufactured; shall not be nearing End of sale/End of support; and shall be supported by the LSI and respective OEM along with service and spares support to ensure its efficient and effective operation for the entire duration of the contract.

24.4 The LSI warrants that the goods supplied under this contract shall be of the highest grade and quality and consisted with the established and generally accepted standards for materials of this type. The goods shall be in full conformity with the specifications and shall operate properly and safely. All recent design improvements in goods, unless provided otherwise in the Contract, shall also be made available.

24.5 The LSI further warrants at the time of the Delivery that the Goods supplied under this Contract shall be free from all encumbrances and defects/faults arising from design, material, manufacture or workmanship (except insofar as the design or material is required by the Authority's Specifications) or from any act or omission of the LSI, that may develop under normal use of the supplied Goods in the conditions prevailing at the respective Sites.

24.6 The Authority shall promptly notify the SI in writing of any claims arising under this warranty.

24.7 Upon receipt of such notice, the LSI shall, with all reasonable speed, repair or replace the defective Goods or parts thereof, without prejudice to any other rights which the Authority may have against the LSI under the Contract.

24.8 If the LSI, having been notified, fails to remedy the defect(s) within the Warranty period, the Authority may proceed to take such remedial action as may be necessary, at the LSI's risk and expense and without prejudice to any other rights which the Authority may have against the LSI under the Contract.

24.9 Any OEM specific warranty terms that do not conform to conditions under this Contract shall not be acceptable.

25. Term and Extension of the Contract

25.1 The Contract period shall commence from the Effective Date, and shall remain valid for 60 Months from the effective date.

25.2 If the delay occurs due to circumstances beyond control of LSI such as strikes, lockouts, fire, accident, delay in approvals or any cause whatsoever beyond the reasonable control of LSI, a reasonable extension of time shall be granted by the Authority.

25.3 The Authority shall reserve the sole right to grant any extension to the term abovementioned and shall notify in writing to SI, at least 3 (three) months before the expiration of the Term hereof, whether it shall grant LSI an extension of the Term. The decision to grant or refuse the extension shall be at the Authority's discretion and such extension of the contract, if any, shall be as per terms agreed mutually between the Authority and LSI.

25.4 Where the Authority is of the view that no further extension of the term be granted to LSI, the Authority shall notify LSI of its decision at least 3 (three) months prior to the expiry of the Term. Upon receipt of such notice, LSI shall continue to perform all its obligations hereunder, until such reasonable time beyond the Term of the Contract within which, the Authority shall either appoint an alternative agency/SI or create its own infrastructure to operate such Services as are provided under this Contract.

26. Dispute Resolution

26.1 In case, a dispute is referred to arbitration, the arbitration shall be under the **IndianArbitration and Conciliation Act, 1996** and any statutory modification or re-enactment thereof.

26.2 **The procedure of arbitration shall be as follows:**

a) In case of dispute or difference arising between the Authority and the LSI relating to any matter arising out of this agreement it shall be settled in accordance with the Arbitration and Conciliation act 1996. The disputes or differences shall be referred to a sole Arbitrator. The sole Arbitrator shall be appointed by agreement between the parties; failing such agreement, by the Appointing Authority (any one of the organizations as listed in clause 18.6)

b) The Arbitration proceedings shall be held inHubballi, Karnataka , India

c) The cost and expenses of arbitration proceedings will be paid as determined by the Arbitrator. However the expenses incurred by each party in connection with the preparation, presentation, etc. shall be borne by each party itself.

d) Performance under the contract shall continue during the arbitration proceedings and the payment due to the LSI by the authority shall not be withheld unless they are the subject matter of the arbitration proceedings.

26.3 Arbitration proceedings shall be governed by Arbitration and Conciliation Act, 1996.

26.4 The Arbitration proceeding shall be governed by the substantive laws of India.

26.5 The proceedings of Arbitration shall be in English language.

26.6 The list of organizations which are considered as appointing authorities for appointment of sole arbitrators

e) Indian Council of Arbitration, New Delhi

f) International center for alternate dispute resolutions

27. Governing Law and Jurisdiction

27.1 All disputes arising out of or in connection with this Contract shall be governed by the Indian laws for the time being in force, and as amended from time to time and the Civil Court at Bengaluru city, India, shall have jurisdiction over all matters arising out of or relating to this Agreement.

28. Amendment

28.1 The Parties acknowledge and agree that amendment to this agreement shall be made in writing in accordance with terms of this Agreement.

29. Time is the Essence

29.1 Time shall be of the essence in respect of any date or period specified in this Contract or any notice, demand or other communication served under or pursuant to any provision of this Contract and in particular in respect of the completion of the activities by LSI by the specified completion date.

30. Conflict of interest

30.1 LSI shall disclose to the Authority in writing, all actual and potential conflicts of interest that exist, arise or may arise (either for LSI or LSI's Team) in the course of performing the Services as soon as practical after it becomes aware of that conflict.

31. Publicity

31.1 LSI shall not make or permit to be made a public announcement or media release about any aspect of this Contract unless the Authority first gives LSI its written consent.

32. Force Majeure

32.1 Force Majeure shall not include any events caused due to acts/omissions of LSI resulting in a breach/contravention of any of the terms of the Contract and/or LSI's Bid. It shall also not include any default on the part of LSI due to its negligence or failure to implement the stipulated/proposed precautions, as were required to be taken under the Contract.

32.2 Failure or occurrence of a delay in performance of any of the obligations of either party shall constitute a Force Majeure event only where such failure or delay could not have reasonably been foreseen i.e. war, or hostility, acts of the public enemy, civil commotion, sabotage, fires, floods, explosions, epidemics, quarantine restriction, strikes, lockouts or act of God (hereinafter referred to as events) , or where despite the presence of adequate and stipulated safeguards the failure to perform obligations has occurred at any location in scope. In such an event, the affected party shall inform the other party in writing within five days of the occurrence of such event. Any failure or lapse on the part of LSI in performing any obligation as is necessary and proper, to negate the damage due to projected force majeure events or to mitigate the damage that may be caused due to the above mentioned events or the failure to provide adequate disaster management/

recovery or any failure in setting up a contingency mechanism would not constitute force majeure, as set out above.

32.3 In case of a Force Majeure, all Parties shall endeavor to agree on an alternate mode of performance in order to ensure the continuity of service and implementation of the obligations of a party under the Contract and to minimize any adverse consequences of Force Majeure.

32.4 In the event a Force Majeure, persists for a period beyond 90 days without prejudice to any other provisions contained anywhere in the agreement the authority has the right to terminate the contract.

33. Delivery

33.1 LSI shall bear the cost for packing, transport, insurance, storage and delivery of all the goods for "**Request for Proposal for Selection of System Integrator for Implementation of Command and Control Centre Components of Hubballi-Dharwad**" at all locations identified by the Authority.

33.2 The Goods and Manpower supplied under this Contract shall conform to the standards mentioned in the RFP, and, when no applicable standard is mentioned, to the authoritative standards; such standard shall be approved by Authority.

34. Insurance

34.1 The Goods supplied under this Contract shall be comprehensively insured by LSI at his own cost, against any loss or damage, for the entire period of the contract. LSI shall submit to the Authority, documentary evidence issued by the insurance company, indicating that such insurance has been taken.

34.2 LSI shall bear all the statutory levies like customs, insurance, freight, etc. applicable on the goods and also the charges like transportation charges, octroi, etc. that may be applicable till the goods are delivered at the respective sites of installation and the installation cost shall also be borne by LSI.

34.3 LSI shall take out and maintain at its own cost, on terms and conditions approved by the Authority, insurance against the risks, and for the coverage's, as specified below;

a. At the Authority's request, shall provide evidence to the Authority showing that such insurance has been taken out and maintained and that the current premiums therefore have been paid.

b. Employer's liability and workers' compensation insurance in respect of the Personnel of the Company, in accordance with the relevant provisions of the Applicable Law, as well as, with respect to such Personnel, any such life, health, accident, travel or other insurance as may be appropriate

35. Transfer of Ownership

35.1 LSI must transfer all titles to the assets and goods procured for the purpose of the project to the Authority at the time of Acceptance of System. This includes all licenses, titles, source code, certificates, hardware, devices, equipment's etc. related to the system

designed, developed, installed and maintained by SI. SI is expected to provide source code, transfer IPR and ownership right of only those solutions which would be customized by bidder for use of Hubballi-Dharwad Smart City Ltd. For any preexisting work, SI & Hubballi-Dharwad Smart City Ltd shall be jointly responsible and its use in any other project by SI shall be decided on mutual consent.

35.2 Forthwith upon expiry or earlier termination of the Contract and at any other time on demand by the Authority, LSI shall deliver to the Authority all Documents provided by or originating from the Authority and all Documents produced by or from or for LSI in the course of performing the Services, unless otherwise directed in writing by the Authority at no additional cost. LSI shall not, without the prior written consent of the Authority store, copy, distribute or retain any such Documents.

36. Exit Management Process

36.1 **Purpose**

36.1.1 The period for providing exit management services (Exist Management Period) would be applicable under two cases :

a) In case of expiry of this Agreement: Under this scenario, exit management period would start 6 months before the date of expiry of this Agreement and end on the date of expiry of this Agreement.

b) In case of termination of this Agreement: Under this scenario, Exit Management Period would commence a month after the notice of termination is issued to the MSI and extend for a period of 6 months.

36.1.2 In the case of termination of this Agreement due to illegality, the Parties shall agree at that time whether, and if so during what period, the provisions of this Clause shall apply.

36.1.3 The Parties shall ensure that their respective associated entities carry out their respective obligations set out in this Exit Management Clause.

36.2 **Cooperation and Provision of Information**

During the Exit Management period:

36.2.1 The LSI will allow the Authority access to information reasonably required to define the then current mode of operation associated with the provision of the services to enable the Authority to assess the existing services being delivered;

36.2.2 Promptly on reasonable request by the Authority, the LSI shall provide access to and copies of all information held or controlled by them which they have prepared or maintained in accordance with this Agreement relating to any material aspect of the Services (whether provided by the LSI or sub-contractors appointed by the LSI). The Authority shall be entitled to copy of all such information. Such information shall include details pertaining to the Services rendered and other performance data. The LSI shall permit the Authority and/or any Replacement LSI to have reasonable access to its employees as reasonably required by the Authority to understand the methods

of delivery of the Services employed by the MSI and to assist appropriate knowledge transfer.

36.3 **Confidential Information, Security and Data**

36.3.1 LSI will promptly on the commencement of the Exit Management Period supply to the Authority the following:

a) Information relating to the current services rendered and customer satisfaction surveys and performance data relating to the performance of sub-contractors in relation to the Services;

b) Documentation relating to Project's Intellectual Property Rights;

c) PROJECT data and confidential information;

d) Documentation relating to sub-contractors;

e) All current and updated PROJECT data as is reasonably required for purposes of PROJECT or its nominated agencies transitioning the Services to its Replacement LSI in a readily available format nominated by the Authority;

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

36.3.2 Before the expiry of the Exit Management Period, the LSI shall deliver to the Authority all new or up-dated materials from the categories set out in the Clause above and shall not retain any copies thereof, except that the LSI shall be permitted to retain one copy of such materials for archival purposes only.

36.3.3 Before the expiry of the Exit Management Period, unless otherwise provided under this Agreement, the Authority shall deliver to the LSI all forms of LSI's confidential information, which is in the possession or control of PROJECT or its users.

36.4 Transfer of Certain Agreements

On request by the Authority, the LSI shall effect such assignments, transfers, licenses and sub-licenses as the Authority may require in favor of the Authority, or its Replacement LSI in relation to any equipment lease, maintenance or service provision agreement between LSI and third party lessors, vendors, and which are related to the services and reasonably necessary for the carrying out of replacement services by the Authority or its Replacement LSI.

36.5 General Obligations of the LSI

36.5.1 LSI shall provide all such information as may reasonably be necessary to effect as seamless a handover as practicable in the circumstances to the Authority or its nominated agencies or its Replacement LSI and which the LSI has in its possession or control at any time during the Exit Management Period.

36.5.2 For the purposes of this Clause, anything in the possession or control of any LSI, associated entity, or sub-contractor is deemed to be in the possession or control of the LSI.

36.5.3 LSI shall commit adequate resources to comply with its obligations under this Exit Management Schedule.

37. Exit Management Plan

37.1 An Exit Management plan shall be furnished by LSI in writing to the Authority within 90 days from the date of signing the Contract, which shall deal with at least the following aspects of exit management in relation to the contract as a whole and in relation to the Project Implementation, and Service Level monitoring.

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

ii. Plans for provision of contingent support to Project and Replacement Service Provider for a reasonable period after transfer.

iii. Exit Management plan in case of normal termination of Contract period

iv. Exit Management plan in case of any eventuality due to which Project is terminated before the contract period.

v. Exit Management plan in case of termination of LSI

37.2 Exit Management plan at the minimum adhere to the following:

i. Three (3) months of the support to Replacement Service Provider post termination of the Contract.

ii. Complete handover of all the Deliverables including Planning documents, bill of materials, functional requirements specification, technical specifications of all equipment, change requests if any, sources codes,wherever applicable, reports, documents and other relevant items to the Replacement Service Provider/Authority.

iii. Certificate of Acceptance from authorized representative of Replacement Service Provider issued to LSI on successful completion of handover and knowledge transfer.

37.3 In the event of termination or expiry of the contract, Project Implementation, or Service Level monitoring, both Bidder and Authority shall comply with the Exit Management Plan.

37.4 During the exit management period, LSI shall use its best efforts to deliver the services.

B. Special Conditions of Contract (SCC)

38. Performance Security

38.1 The successful bidder shall submit the following Performance Bank Guarantees at his own expense submit unconditional and irrevocable Performance Bank Guarantee (PBG) to the Authority, GoK. The PBG shall be from a Nationalized Bank/Scheduled bank in the format prescribed in Section 9 - Annexure 7 (a), payable on demand at any of the bank branch at Hubballi , for the due performance and fulfilment of the contract by the bidder.

i. Implementation Performance Bank Guarantee (IPBG) shall be submitted within Twenty One (21) working days from the date of issuance of LOI, for an amount equivalent to 10% of the total CAPEX price (awarded capex amount) towards the implementation Phase, valid for a period of one year or Until Go-Live date whichever is later.

ii. Operational Performance Bank Guarantee (OPBG) shall be submitted to the authority prior to expiry of the IPBG at least 3 months in advance, towards the Operation Phase for an amount equivalent to 10% of the total OPEX price (awarded opex amount) valid for a period of 5 years plus 60 days.

39. Liquidated Damages

39.1 If LSI fails to supply, install or maintain any or all of the goods as per the contract, within the time period(s) specified in the RFP Vol II, the Authority without prejudice to its other rights and remedies under the Contract, shall deduct from the Contract price an amount, as liquidated damages, as specified in Penalties of RFP Vol III.

39.2 The deduction shall not in any case exceed 10 % of the **Contract** Value.

39.3 The Authority may without prejudice to its right to effect recovery by any other method, deduct the amount of liquidated damages from any money belonging to LSI in its hands (which includes the Authority's right to claim such amount against LSI's Bank Guarantee) or which may become due to LSI. Any such recovery or liquidated damages shall not in any way relieve LSI from any of its obligations to complete the Work or from any other obligations and liabilities under the Contract.

39.4 Delay not attributable to LSI shall be considered for exclusion for the purpose of computing liquidated damages.

40. Limitation of Liability

40.1 There shall be no limitation of liability in case of any damages for bodily injury (including death) and damage to real property and tangible personal property.

40.2 This Agreement does not grant or create any rights, benefits, claims, obligations or causes of action in, to or on behalf of any person or entity (including any third party) other than between the respective parties to this Agreement.

40.3 Any claim or series of claims arising out of in connection with this Agreement shall be time barred and invalid if legal proceedings are not commenced by the relevant Party

against the other Party within a period of 18 months from the date when the cause of action first arose or within such longer period as may be permitted by applicable law without the possibility of contractual waiver or limitation.

40.4 The Authority shall be entitled to claim the remedy of specific performance under this Agreement.

40.5 There shall be no limit on liability due for damages mentioned in Clause 40.1 above and penalties payable by the MSI for breach of the SLA, in accordance with this Agreement.

40.6 The LSI shall also be liable for damages caused due to breach by LSI of its obligations under this Agreement other than as stated in Clause 40.5 above. However, the aggregate liability of the LSI for damages caused due to breach by LSI of its obligations under this Agreement other than as stated in Clause 40.5 above, shall not exceed the aggregate amount received by the LSI from the Authority under this Agreement. It is hereby clarified that in the event this Agreement is terminated by the Authority for breach by LSI of its obligations under this Agreement, the LSI shall be liable to make payment of Rs. _____/-(Rupees _____only), as penalty. IN such event the Authority, shall be entitled to invoke the Performance Bank Guarantee provided by the LSI towards penalty under this Section.

41. Ownership and Retention of Documents

41.1 The Authority shall own the Documents, prepared by or for LSI arising out of or in connection with the Contract.

41.2 Forthwith upon expiry or earlier termination of this Contract and at any other time on demand by the Authority, LSI shall deliver to the Authority all documents provided by or originating from the Authority and all documents produced by or for LSI in the course of performing the Services, unless otherwise directed in writing by the Authority at no additional cost. LSI shall not, without the prior written consent of the Authority store, copy, distribute or retain any such documents.

42. Information Security

42.1 LSI shall not carry any written/printed document, layout diagrams, CD, hard disk, storage tapes, other storage devices or any other goods/material proprietary to Authority into/out of any Project location without written permission from the Authority.

42.2 LSI shall not destroy any unwanted documents, defective tapes/media present at any location on their own. All such documents, tapes/media shall be handed over to the Authority.

42.3 All documentation and media at any implementation location shall be properly identified, labeled and numbered by LSI. LSI shall keep track of all such items and provide a summary report of these items to the Authority whenever asked for.

42.4 Access to Authority's data and systems, Internet facility used by LSI at any location shall be in accordance with the written permission by the Authority. The Authority shall allow LSI to use facility in a limited manner subject to availability. It is the responsibility of LSI to prepare and equip himself in order to meet the requirements.

42.5 LSI must acknowledge that Authority's business data and other Authority proprietary information or materials, whether developed by Authority or being used by Authority pursuant to a license agreement with a third party (the foregoing collectively referred to herein as "proprietary information") are confidential and proprietary to Authority; and LSI along with its team agrees to use reasonable care to safeguard the proprietary information and to prevent the unauthorized use or disclosure thereof, which care shall not be less than that used by LSI to protect its own proprietary information. LSI recognizes that the goodwill of Authority depends, among other things, upon LSI keeping such proprietary information confidential and that unauthorized disclosure of the same by LSI or its team could damage the goodwill of Authority, and that by reason of LSI's duties hereunder. LSI may come into possession of such proprietary information, even though LSI does not take any direct part in or furnish the services performed for the creation of said proprietary information and shall limit access thereto to employees with a need to such access to perform the services required by this agreement. LSI shall use such information only for the purpose of performing the said services.

42.6 LSI shall, upon termination of this agreement for any reason, or upon demand by Authority, whichever is earliest, return any and all information provided to LSI by Authority, including any copies or reproductions, both hardcopy and electronic.

42.7 By virtue of the Contract, LSI team may have access to personal information of the Authority and/or a third party. The Authority has the sole ownership of and the right to use, all such data in perpetuity including any data or other information pertaining to the citizens that may be in the possession of LSI team in the course of performing the Services under the Contract

43. Audit, Access and Reporting

43.1 Purpose

This Clause details the audit, access and reporting rights and obligations of the Authority and the LSI under this Agreement.

43.2 Performance Audit

43.2.1 LSI shall allow Authority to access all the H/W and Software installed under the scope of this RFP located at the Data Center centrally at Bangalore and various implementation Location in the **Request for Proposal for Selection of System Integrator for Implementation of Command and Control Centre Components of Hubballi-Dharwad**

43.2.2 for the purpose of verifying the performance of the LSI by way of quarterly audit that would verify all service levels during the contractual period.

43.2.3 The third party agency will be responsible for verification, validation of all invoices under the terms and conditions of the agreement and will recommend the eligible payment.

43.3 Audit Notice and Timing

43.3.1 As soon as reasonably practicable after the Effective Date, the Parties shall use their best endeavors to agree to a timetable for routine audits during the Implementation

Phase and the Roll out Phase. Such timetable During the Implementation Phase, the Authority and thereafter during the Roll out Phase, the Authority shall conduct routine audits in accordance with such agreed timetable and shall not be required to give the LSI any further notice of carrying out such audits.

43.3.2 Authority may conduct non-timetabled audits at his/ her own discretion if he/ she reasonably believes that such non-timetabled audits are necessary as a result of an act of fraud by the LSI, a security violation, or breach of confidentiality obligations by the LSI, provided that the requirement for such an audit is notified in writing to the LSI a reasonable period time of at least 7 days, prior to the audit (taking into account the circumstances giving rise to the reasonable belief) stating in a reasonable level of detail the reasons for the requirement and the alleged facts on which the requirement is based. If the LSI considers that the non-timetabled audit was not appropriate, the matter shall be referred to Steering committee of the Authority.

43.3.3 The frequency of audits shall be 6 month, provided always that the Authority shall endeavor to conduct such audits with the lowest levels of inconvenience and disturbance practicable being caused to the LSI.

43.4 Access

43.4.1 The LSI shall provide to the Authority reasonable access to employees, subcontractors, suppliers, agents and third party facilities as detailed in as detailed in the RFP, documents, records and systems reasonably required for audit and shall provide all such persons with routine assistance in connection with the audits and inspections. The Authority shall have the right to copy and retain copies of any relevant records. The LSI shall make every reasonable effort to co-operate with them.

43.5 Audit Rights

43.5.1 The Authority shall have the right to audit and inspect LSI as detailed in the RFP, the Data centres, Sites, documents, records, procedures and systems relating to the provision of the services, but only to the extent that they relate to the provision of the services, as shall be reasonably necessary to verify.

a) The security, integrity and availability of all Project data processed, held or conveyed by the LSI on behalf of Authority and documentation related thereto;

b) That the actual level of performance of the services is the same as specified in the SLA;

c) That the LSI has complied with the relevant technical standards, and has adequate internal controls in place; and

d) The compliance of the LSI with any other obligation under this Agreement.

e) Security audit and implementation audit of the system shall be done once each year, the cost of which shall be borne by the LSI.

43.5.2 For the avoidance of doubt the audit rights under this clause shall not include access to the LSI's profit margins or overheads or any other financial data related to profit margins or overheads associated with any obligation under this Agreement.

43.6 Action and Review

43.6.1 Any change or amendment to the systems and procedures of the LSI, where applicable arising from the audit report shall be agreed within thirty (30) calendar days from the submission of the said report.

43.6.2 Any discrepancies identified by any audit pursuant to this Clause shall be immediately notified to the Authority and the LSI Project Manager who shall determine what action should be taken in respect of such discrepancies in accordance with the terms of this Agreement

43.7 Records and Information

43.7.1 For the purposes of audit in accordance with this Clause, the LSI shall maintain true and accurate records in connection with the provision of the Services and the LSI shall handover all the relevant records and documents except its financial records as far as they relate to profit margins and overheads upon the termination or expiry of this Agreement.

44. Records of contract documents

44.1 LSI shall at all-time make and keep sufficient copies of the process manuals, operating procedures, specifications, Contract documents and any other documentation for him to fulfil his duties under the Contract.

44.2 LSI shall keep on the Site at least three copies of each and every specification and Contract Document, in excess of his own requirement and those copies shall be available at all times for use by the Authority's Representative and by any other person authorized by the Authority's Representative.

45. Security and Safety

45.1 LSI shall comply with the directions issued from time to time by the Authority and the standards related to the security and safety, in so far as it applies to the provision of the Services.

45.2 LSI shall upon reasonable request by the Authority, or its nominee(s) participate in regular meetings when safety and information technology security matters are reviewed.

46. Confidentiality

46.1 LSI shall not, either during the term or after expiration of this Contract, disclose any proprietary or confidential information relating to the Services/Contract and/or Authority's business/operations, information, Application/software, hardware, business data, architecture schematics, designs, storage media and other information/documents without the prior written consent of the Authority.

46.2 The Authority reserves the right to adopt legal proceedings, civil or criminal, against LSI in relation to a dispute arising out of breach of obligation by LSI under this clause.

46.3 LSI shall do everything reasonably possible to preserve the confidentiality of the Confidential Information including execution of a confidentiality agreement with the Authority to the satisfaction of the Authority.

46.4 LSI shall notify the Authority promptly if it is aware of any disclosure of the Confidential Information otherwise than as permitted by the Contract or with the authority of the Authority.

46.5 LSI shall be liable to fully recompense the Authority for any loss of revenue arising from breach of confidentiality.

47. Events of Default by LSI

The failure on the part of LSI 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 SI. The events of default are but not limited to:

47.1 LSI has failed to perform any instructions or directives/amended directive issued by the Authority which it deems proper and necessary to execute the scope of work or provide services under the Contract, or

47.2 LSI has failed to confirm/adhere to any of the key performance indicators as laid down in the Key Performance Measures/Service Levels, or if LSI has fallen short of matching such standards/benchmarks/targets as the Authority may have designated with respect to the system or any goods, task or service, necessary for the execution of the scope of work and performance of services under this Contract. The above mentioned failure on the part of LSI may be in terms of failure to adhere to performance, quality, timelines, specifications, requirements or any other criteria as defined by the Authority;

47.3 LSI has failed to remedy a defect or failure to perform its obligations in accordance with the specifications issued by the Authority, despite being served with a default notice which laid down the specific deviance on the part of LSI/LSI's Team to comply with any stipulations or standards as laid down by the Authority; or LSI 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 RFP and this Contract

47.4 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 LSI.

47.5 LSI has failed to comply with or is in breach or contravention of any applicable laws.Where there has been an occurrence of such defaults inter alia as stated above, the Authority shall issue a notice of default to SI, setting out specific defaults/deviances/omissions/non-compliances/non-performances and providing a notice of thirty (30) days to enable such defaulting party to remedy the default committed.

47.6 Where despite the issuance of a default notice to LSI by the Authority, LSI fails to remedy the default to the satisfaction of the Authority, the Authority may, where it deems fit, issue to the defaulting party another default notice or proceed to contract termination.

48. Termination

The Authority may, terminate this Contract in whole or in part by giving LSI a prior and written noticeindicating its intention to terminate the Contract under the following circumstances:

48.1 Where the Authority is of the opinion that there has been such Event of Default on the part of LSI which would make it proper and necessary to terminate this Contract and may include failure on the part of LSI to respect any of its commitments with regard to any part of its obligations under its Bid, the RFP or under this Contract.

48.2 Where it comes to the Authority's attention that LSI (or LSI's Team) is in a position of actual conflict of interest with the interests of the Authority, in relation to any of terms of LSI's Bid, the RFP or this Contract.

48.3 Where LSI's ability to survive as an independent corporate entity is threatened or is lost owing to any reason whatsoever, including inter-alia the filing of any bankruptcy proceedings against LSI, any failure by LSI to pay any of its dues to its creditors, the institution of any winding up proceedings against LSI or the happening of any such events that are adverse to the commercial viability of LSI. In the event of the happening of any events of the above nature, the Authority shall reserve the right to take any steps as are necessary, to ensure the effective transition of the sites pilot site to a successor agency, and to ensure business continuity.

48.4 **Termination for Insolvency**: The Authority may at any time terminate the Contract by giving written notice to LSI, without compensation to LSI, if LSI becomes bankrupt or otherwise insolvent, provided that such termination shall not prejudice or affect any right of action or remedy which has accrued or shall accrue thereafter to the Authority.

49. Consequence of Termination

49.1 In the event of termination of the Contract due to any cause whatsoever, whether consequent to the stipulated Term of the Contract or otherwise the Authority shall be entitled to impose any such obligations and conditions and issue any clarifications as may be necessary to ensure an efficient transition and effective business continuity of the project which LSI shall be obliged to comply with and take all available steps to minimize loss resulting from that termination/breach, and further allow and provide all such assistance to the Authority and/or the successor agency/service provider, as may be required, to take over the obligations of LSI in relation to the execution/continued execution of the requirements of the Contract.

49.2 Where the termination of the Contract is prior to its stipulated term on account of a Default on the part of LSI or due to the fact that the survival of LSI as an independent corporate entity is threatened/has ceased, or for any other reason, whatsoever, the Authorityshall pay LSI for that part of the Services which have been authorized by the Authority and satisfactorily performed by LSI up to the date of termination.

49.3 Nothing herein shall restrict the right of the Authority to invoke the Bank Guarantee and other Guarantees furnished hereunder and pursue such other rights and/or remedies that may be available to the Authority under law.

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

49.5 Upon Termination of this Agreement by the Authority, the Parties will comply with the Exit Management Process and Plan.

50. Notices

50.1 Any notice or other document, which may be given by either Party under this Agreement, shall be given in writing in person or by pre-paid recorded delivery post.

50.2 In relation to a notice given under this Agreement, any such notice or other document shall be addressed to the other Party's principal of registered office address as set out below

Postal Address:

The Managing Director

Hubballi Dharwad Smart City Limited,

Hubballi

LSI :

M/s. _____

_____

_____

50.3 Any notice or other document shall be deemed to have been given to the other Party (or, if relevant, its relevant associated company) when delivered (if delivered in person) if delivered between the hours of 10:00am and 5:00pm at the address of the other Party set forth above and obtain confirmation on the next working day thereafter if delivered outside such hours, and 7 days from the date of posting (if by letter).

50.4 Either Party to this Agreement may change its address, telephone number, facsimile number and nominated contact for notification purposes by giving the other reasonable prior written notice of the new information and its effective date.

51. Variations And Further Assurance

51.1 No amendment, variation or other change to this Agreement shall be valid unless authorized in accordance with the change control procedure as set out in the Change control Clause 57 of this RFP mentioned below and made in writing and signed by the duly authorized representatives of the Parties to this Agreement.

51.2 Each Party to this Agreement agrees to enter into or execute, without limitation, whatever other agreement, document, consent and waiver and to do all other things which shall or may be reasonably required to complete and deliver the obligations set out in this Agreement.

52. Severability And Waiver

52.1 If any provision of this Agreement, or any part thereof, shall be found by any court or administrative body of competent jurisdiction to be illegal, invalid or unenforceable the illegality, invalidity or unenforceability of such provision or part provision shall not affect the other provisions of this Agreement or the remainder of the provisions in question which shall remain in full force and affect. The relevant Parties shall negotiate in good faith in order to agree to substitute for any illegal, invalid or unenforceable provision a valid and enforceable provision which achieves to the greatest extent possible the

economic, legal and commercial objectives of the illegal, invalid or unenforceable provision or part provision

52.2 No failure to exercise or enforce and no delay in exercising or enforcing on the part of either Party to this Agreement of any right, remedy or provision of this Agreement shall operate as a waiver of such right, remedy or provision in any future application nor shall any single or partial exercise or enforcement of any right, remedy or provision preclude any other or further exercise or enforcement of such right, remedy or provision or the exercise or enforcement of any other right, remedy or provision.

53. Compliance With Laws And Regulations

53.1 Each Party to this Agreement accepts that its individual conduct shall (to the extent applicable to it) at all times comply with all applicable laws, rules and regulations. For the avoidance of doubt the obligations of the Parties to this Agreement are subject to their respective compliance with all applicable laws and regulations.

54. Ethics

54.1 LSI represents, warrants and covenants that It has given no commitments, payments, gifts, kickbacks, lavish or expensive entertainment or other things of value to any employee or agent of Authority, or its nominated agencies in connection with this Service Agreement and acknowledges that the giving of any such payment, gifts, entertainment, or other things of value is strictly in violation of Authority's standard policies and may result in cancellation of this Agreement.

55. Entire Agreement

55.1 This Agreement, the SLA and the definitions, Vol.I, Vol.II and Vol.III and all Annexures appended thereto and the contents and specifications of the RFP constitute the entire agreement between the parties with respect to their subject matter, and as to all other representations, understandings or agreements which are not fully expressed herein.

56. Survivability

56.1 The termination or expiry of this Agreement for any reason shall not affect or prejudice any terms of this Agreement, or the rights of the Parties under them which are either expressly or by implication intended to come into effect or continue in effect after such expiry or termination.

57. Change Control Note (CCN)

57.1 This applies to and describes the procedure to be followed in the event of any proposed change to contract, site Implementation, and Service levels. Such change shall include, but shall not be limited to, changes in the scope of services provided by LSI and changes to the terms of payment.

57.2 Change requests in respect of the contract, shall emanate from the LSI either on his own or as instructed by the authority,however the same shall be approved by the authority

who shall act as its sponsor throughout the Change Control Process, for which LSI shall complete Part A of the CCN (Annex I RFP Vol. III)..

57.3 LSI and the Authority while preparing the CCN, shall consider the change in the context of whether the change is beyond the scope of Services. The CCN shall be applicable for the items which are beyond the stated/implied scope of work as per the RFP document.

57.4 In event, there is no common consensus between both the parties, a Committee of Subject/Industry Expert will be appointed by the Authority and the decision of the Committee will be final and binding on both the parties.

57.5 In the event the LSI has quoted for an infrastructure that has already been listed in his quote and is easily tangible, the same shall be applicable if variation order is placed at any point during the 5 years of LSI's appointment. CCN will be applicable only for any new functional requirement and new infrastructure requirement.

57.6 SI shall assess the CCN and complete Part B of the CCN. In completing Part B of the CCN SI/Lead Bidder shall provide as a minimum:

- a description of the change;
- a list of deliverables required for implementing the change;
- a timetable for implementation;
- an estimate of any proposed change;
- any relevant acceptance criteria;
- an assessment of the value of the proposed change;
- Material evidence to prove that the proposed change is not already covered within the scope of the RFP, Agreement and Service Levels.

57.7 Prior to submission of the completed CCN to the Authority or its nominated agencies, LSI shall undertake its own internal review of the proposal and obtain all necessary internal approvals. As a part of this internal review process, LSI shall consider the materiality of the proposed change in the context of the Agreement, the sites, Service levels affected by the change and the total effect that may arise from implementation of the change.

57.8 Each Party shall be responsible for its own costs incurred in the quotation, preparation of CCNs and in the completion of its obligations described in this process provided LSI meets the obligations as set in the CCN. In the event LSI is unable to meet the obligations as defined in the CCN then the cost of getting it done by third party shall be borne by LSI. Change requests and CCNs shall be reported monthly to each Party's representative who shall prioritize and review progress.

C. SERVICE LEVELS

58. Purpose

58.1 The purpose is to define the levels of service provided by LSI to the Authority for the duration of the contract.

- Start a processthat monitors the aspect of performance.
- Intimate the authority on the drops of performance below the threshold defined by the Authority
- Help Authority control the levels and performance of MSI's services

58.2 The Service Levels are between the Authority and LSI.

59. Service Level Agreements & Targets

59.1 This section is agreed to by Authority and LSI as the key performance indicator for the project. This may be reviewed and revised according to the procedures detailed in Clause 64-SLA Change Control.

59.2 The following section reflects the measurements to be used to track and report system's performance on a regular basis. The targets shown in the tables Clause 61 of this RFP are for the period of contract.

59.3 The procedures in Clause 26shall be used if there is a dispute between Authority and LSI on what the permanent targets should be.

60. Service Level Monitoring

60.1 Service Level parameters defined in Clause 61shall be monitored on a periodic basis, as per the individual parameter requirements. The Authority will arrange for providing appropriate web based SLA measurement and monitoring tools with requisite number of credentials. The LSI needs to provide all requisite access to the Authorities designated personnel for configuring all the associated components with the SLA management software. Authority shall also have the right to have an independent technical auditor, third party appointed by the authority for monitoring the Service levels. LSI shall be expected to take immediate corrective action for any breach in SLA. In case issues are not rectified to the complete satisfaction of Authority, within a reasonable period of time defined in this RFP, then the Authority shall have the right to take appropriate penalizing actions, or termination of the contract.

60.2 Performance Penalty for not meeting a measurement parameter for any two months in consecutive quarters shall result in twice the penalty percentage of that respective measurement parameter in the third quarter for all the three months at the discretion of the Authority.

60.3 Maximum Penalty applicable for any quarter shall not exceed 10% of the 'applicable fees' for the respective quarter.

60.4 Three consecutive quarterly deductions of 10% of the applicable fee on account of any reasons shall be deemed to be an event of default and termination as per Clause 48 of this Section of RFP respectively and the consequences as provided in Clause 49 of this section of RFP shall follow at the discretion of the Authority.

60.5 The payment to the agency shall be on Quarterly basis as stated in the RFP.

60.6 For purposes of the SLA, the definitions and terms as specified in the document along with the following terms shall have the meanings set forth below:

a) "Total Time" - Total number of hours in the quarter (or the concerned period) being considered for evaluation of SLA performance.

b) "Uptime" – Time period for which the specified services/ outcomes are available in the period being considered for evaluation of SLA.

c) "Downtime"- Time period for which the specified services/ components/ outcomes are not available in the concerned period, being considered for evaluation of SLA, which would exclude downtime owing to Force Majeure & Reasons beyond control of the successful bidder.

d) "Scheduled Maintenance Time" - Time period for which the specified services/ components with specified technical and service standards are not available due to scheduled maintenance activity. MSI is required to take at least 10 days prior approval from the authority for any such activity. The scheduled maintenance should be carried out during non-peak hours (like post mid-night, and should not be for more than 4 hours. Such planned downtime would be granted max 4 times a year.

e) "Incident" - Any event / abnormalities in the service being rendered, that may lead to disruption in normal operations and services to the end user.

61. Measurement & targets

61.1 Implementation phase related performance levels

T1 is the date of Award of Contract/Signing of the Contract

	Activity		Individual phases of the activities	Timeline	Penalty for delay
Phase-I (270 Days)					
1	Resource Mobilization	•	• Resource Mobilization • Inception Report	T1+15 Days	Delay of one week, 0.05% of Contract Value Delay of Two week, 0.075% of Contract Value Subsequent delay will result in deduction of 0.1% of Contract Value
2	Implementation of ICT enabled Solid		SOPs and Use-Cases for integration of individual ICT	T1+30 Days	0.5% of the Total Capex for

	Activity		Individual phases of the activities	Timeline	Penalty for delay
	Waste Management Application, Smart Parking, Intelligent Traffic Management System, VMS, Smart meters , environmental sensors, Digital bill boards, Wi-hotspots, Command and Control Center, PIS		application with Common Command and Control Application		the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Procurement of the hardware & software infrastructure required for : • Implementation of Solution Components • Set-up of Command and Control Centre	T1+45 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			FRS, SRS,LLD, HLD, CONOPS, for implementation and integration of individual ICT application with Common Command and Control Application	T1+60 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Installation & Commissioning of field devices and H/W , S/W required at the Command and Control Centre	T1+90 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Development and Testing of standalone application	T1+120 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.

	Activity		Individual phases of the activities	Timeline	Penalty for delay
			Testing of Application Integration	T1+150 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Completion of Integration with UAT sign off	T1+ 180 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
3	Integration of applications at Common Operating platform		ICT Solid Waste Management Application	T1+270 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			City Surveillance (Police Feed)		
			Intelligent Public Transport System		
			Intelligent Traffic Management		
			Smart Parking		
			VMS		
			e-Governance		
			Smart Water Meters		
			Digital Bill Boards		
			Wi-Fi Hotspots		
			Fire & Emergency Management		
			Geographical Information System (GIS)		
4	Phase I operationalization		Go-Live	T1+270 days	

	Activity		Individual phases of the activities	Timeline	Penalty for delay
	& Go-Live				
Phase – II (271-450 Days)					
5	Phase II implementation of Physical infrastructure for Smart Parking, ICT enabled Solid Waste Management, Intelligent Traffic Management System, VMS, Digital bill boards, Wi-hotspots, PIS, Network components for city surveillance		Procurement of the residual/ additional hardware & software infrastructure required from phase I	T1+315 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Installation & Commissioning of field devices	T1+360 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
6	Integration of applications at Common Operating platform		Integration of City surveillance (Feed from other cameras installed in the city apart from the police feed) with City ICCC.	T1+ 450 Days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.
			Emergency and Disaster Management		
			Smart Street Lighting		
			e-Governance		
			Water SCADA		
			Geographical Information System (GIS)		
7	Phase II operationalization & Go-Live		Go-Live	T1+450 days	0.5% of the Total Capex for the activity per week of delay or part thereof upto maximum of 10% of the Capex.

	Activity		Individual phases of the activities	Timeline	Penalty for delay

61.2 **Operation & Maintenance Period Penalty**

Sl No	Measurement	Definition	Target	Penalty
1.	CCC H/W Infrastructure including 1. Work Stations 2. Video Wall 3. CCTV Cameras 4. Phones	Overall CCC Components Availability will be measured by following formula: Component Availability (%) = (Total minutes during the month – Planned downtime - Downtime minutes during the month) *100 / Total minutes during the month Total Time shall be measured 24x7 basis for CCC. Measurement Tool: Reports from EMSpreferably open source, under the scope of LSI,	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B, clause 11 of the Volume III.
2.	Availability of city Specific Smart ApplicationSoftware 1. Variable Message System 2. Environmental Sensors 3. Intelligent Traffic 4. Smart Parking 5. Smart SWM 6. Smart Meters 7. Environmental sensors 8. Integrated Operation Platform 9. Digital Bill boards	Availability of each Application to be measured separately and penalty will be calculated accordingly. The Uptime will be measured by following formula: Component Availability (%) = (Total minutes during the month – Planned downtime - Downtime minutes	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B, clause 10 of Volume III and

Sl No	Measurement	Definition	Target	Penalty
	10. Wi-Fi Hotspots	during the month) *100 / Total minutes during the month Total Time shall be measured 24x7 basis for CCC. Measurement Tool: Reports from EMS tool in the scope of MSI		occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B, clause 11 of the Volume III of the RFP.
3.	Availability of field infrastructure including 1. GPS/GSM Unit 2. GPS based handheld/ Mobile Device 3. Environmental Sensors 4. Bulk Flow Meters 5. Traffic Controllers 6. Variable Message System/ PIS 7. Cameras 8. Wi-Fi Hotspots 9. Digital Bill boards 10. Water meters/ Sensors 11. Other Equipment	Availability of each Application to be measured separately and penalty will be calculated accordingly. The Uptime will be measured by following formula: Component Availability (%) = (Total minutes during the month – Planned downtime - Downtime minutes during the month) *100 / Total minutes during the month Total Time shall be measured 24x7 basis for CCC. Measurement Tool: Reports from EMS	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B, clause 10of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B, clause 11 of the Volume III.
4.	**Camera feed and quality wherever required**			
5a	Ratio of Live cameras v/s Total Cameras at any point of time (To be measured every 1 hour)	Number of live working cameras divided by total number of cameras Measurement Tool: Log from VMS tools wherein alerts to the control room shall be generated on non-	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the

Sl No	Measurement	Definition	Target	Penalty
		functioning of camera		QP d) Beyond 10% will be treated as Events of Default as per the Section B, clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 11 of the Volume III.
5b	Average Frame rate maintained for viewing	Average frame rate is 25 FPS to be maintained by all cameras calculated on a Monthly Basis Measurement tool: Log from VMS	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B, clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 11 of the Volume III.
5c	Average Frame rate maintained for Recording	Average frame rate is 12.5 FPS to be maintained by all cameras calculated on a Monthly Basis Measurement tool: Log from VMS	>=99.982%	a) <99.982% to >= 99.9% - 1% of QP b) <99.9% to >= 99.75% - 2% of QP c) Subsequently, for every 0.25% drop in SLA criteria - 2% of QP upto maximum of 10% of the QP

Sl No	Measurement	Definition	Target	Penalty
				d) Beyond 10% will be treated as Events of Default as per the Section B clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B, clause 11 of the Volume III.
	Video stream Latency	Time required for transmission of video feed from one point to another applicable to each camera. The Penalty will be calculated on the average time calculated over the Quarter. Measurement tool: Report from EMS	≤40ms	a) <40ms to >= 42 ms- 1% of QP b) <42ms to >= 44 ms - 2% of QP c) Subsequently, for every ms drop in SLA criteria - 1% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 11 of the Volume III.
	Change of Screen from one camera Source to another	Time required for transmission of screen from one camera source to another Measurement tool: Log from VMS	≤2s	a) <2s to >= 3s- 1% of QP b) <3s to >= 4 s - 2% of QP c) Subsequently, for every second drop in SLA criteria - 1% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of

Sl No	Measurement	Definition	Target	Penalty
				Default as per the Section B clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 11 of the Volume III.
	Video Feed Query Retrieval Response Time	Time taken for receiving response to a query raised for video feed Measurement tool: Log from VMS	≤10s	a) <10s to >= 12s- 1% of QP b) <12s to >= 14 s - 2% of QP c) Subsequently, for every second drop in SLA criteria - 1% of QP upto maximum of 10% of the QP d) Beyond 10% will be treated as Events of Default as per the Section B clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 11 of the Volume III.

61.3 **Measurement of Response and Resolution**

61.3.1 Deducts for Non Performance (Penalty) for Critical Components:

MTTR per Quarter	Fixed Penalty for Breach upto 2 hours buffer.	Additional penalty for every Delayed hour
1-2 Calls not meeting MTTR .	1% of Quarterly Payment	0.1 % of Quarterly Payment
3-5 calls not meeting MTTR	5% of Quarterly Payment	0.1 % of Quarterly Payment
6-10 calls not meeting	10 % of Quarterly Payment	0.1 % of Quarterly

MTTR per Quarter	Fixed Penalty for Breach upto 2 hours buffer.	Additional penalty for every Delayed hour
MTTR		Payment
>10 Calls not meeting MTTR	will be treated as Events of Default as per the Section B clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 11 of the Volume III.	

The Critical Component includes

- **Server H/W**
- **Storage**
- **Networking Components**
- **Security Components**
- **CCC Room H/W**
- **OS and Databases**
- **All the city Specific applications**

61.3.2 Deducts for Non Performance (Penalty) for Non- Critical Components:

MTTR per Quarter	Fixed Penalty for Breach upto 6 hours buffer.	Additional penalty for every Delayed hour
1-2 Calls not meeting MTTR .	0% of Quarterly Payment	0.1 % of Quarterly Payment
3-5 calls not meeting MTTR	1% of Quarterly Payment	0.1 % of Quarterly Payment
6-10 calls not meeting MTTR	5 % of Quarterly Payment	0.1 % of Quarterly Payment
10-14 Calls not meeting MTTR	10 % of Quarterly Payment	
>15 Calls not meeting MTTR	will be treated as Events of Default as per the Section B clause 10 of Volume III and occurrence of the same in consecutive two Quarters will lead to Termination of the Contract as per Section B clause 11 of the Volume III.	

The Non-Critical Component includes

- **Camera**
- **GPS**
- **Other City Specific Field Level Components**

62. Reporting Procedures

62.1 LSI representative shall prepare and distribute Service level performance reports in a mutually agreed format by the 5th working day of subsequent month. The reports shall include "actual versus target" Service Level Performance, a variance analysis and discussion of appropriate issues or significant events. Performance reports shall be distributed to Authority management personnel as directed by Authority.

62.2 The Service Levels monitored through the SLM tool shall be audited and checked by an Independent Engineer nominated by HDSCL.

63. Issue Management Procedures

63.1 **General**

This process provides an appropriate management structure for the orderly consideration and resolution of business and operational issues in the event that quick consensus is not reached between Authority and LSI.

Implementing such a process at the beginning of the outsourcing engagement significantly improves the probability of successful issue resolution. It is expected that this pre-defined process shall only be used on an exception basis if issues are not resolved at lower management levels.

63.2 **Issue Management Process**

63.2.1 Either Authority or LSI may raise an issue by documenting the business or technical problem, which presents a reasonably objective summary of both points of view and identifies specific points of disagreement with possible solutions.

63.2.2 Any unresolved issues/disputes concerning the Project/Contract between the Parties shall first be referred in writing to the Project Manager for his consideration and resolution. If the Project Manager is unable to resolve any issue/dispute within 5 days of reference to them, the Project Manager shall refer the matter to the Program Management Committee. If the Program Management Committee is unable to resolve the issues/disputes referred to them within 15 days the unresolved issue/dispute shall be referred to Steering Committee/high powered committee/Project Implementation Committee for resolution. The Steering Committee within 30 days of reference to them shall try to resolve the issue/dispute.

63.2.3 If the Steering Committee fails to resolve a dispute as per the above clause, the same shall be referred to arbitration. The arbitration proceedings shall be carried out as per the Arbitration procedures mentioned in Clause 26 of this section of RFP.

64. Service Level Change Control

64.1 **General**

It is acknowledged that this **Service levels may change as Authority'sbusiness needs evolve over the course of the contract period**. As such, thisdocument also defines the following management procedures:

a. A process for negotiating changes to the Service Levels

b. An issue management process for documenting and resolving particularly difficult issues.

c. Authority and LSI management escalation process to be used in the event that an issue is not being resolved in a timely manner by the lowest possible level of management.

Any changes to the levels of service provided during the term of this Agreement shall be requested, documented and negotiated in good faith by both parties. Either party can request a change.

64.2 **Service Level Change Process:** The parties may amend Service Level by mutual agreement in accordance. Changes can be proposed by either party.Unresolved issues shall also be addressed. SI's representative shall maintain and distribute current copies of the Service Level document as directed by Authority. Additional copies of the current Service Levels shall be available at all times to authorized parties.

64.3 **Version Control/Release Management:**All negotiated changes shall require changing the version control number. As appropriate, minor changes may be accumulated for periodic release or for release when a critical threshold of change has occurred.

D. ANNEXURES

Annex I: Change Control Note

Change Control Note	**CCN Number:**
Part A: Initiation	
Title	
Originator	
Sponsor	
Date of Initiation	
Details of Proposed Change	
(To include reason for change and appropriate details/specifications. Identify any attachments as A1, A2, and A3 etc.)	
Authorized by Authority	Date
Name	
Signature	
Received by the Bidder	Date
Name	
Signature	
Change	
Change Control Note	**CCN Number:**
Part B: Evaluation	
(Identify any attachments as B1, B2, and B3 etc.) Changes to Services, payment terms, payment profile, documentation, training, service levels and component working arrangements and any other contractual issue.	
Brief Description of Solution:	
Deliverables:	
Timetable:	
Charges for Implementation:	
Other Relevant Information: (including value-added and acceptance criteria)	
Authorized by Authority	Date
Name	
Signature	
Change Control Note	**CCN Number:**
Part C: Authority to Proceed	
Implementation of this CCN as submitted in Part A, in accordance with Part B is: (tick as appropriate)	
Approved	
Rejected	
Requires Further Information (asfollows, or as Attachment 1 etc.)	
For Authority and its nominated agencies	**For SI**
Signature	Signature
Name	Name
Title	Title
Date	Date

Annex II: Form of Agreement

THIS Agreement made the …….date of…….2018, between…… (Hereinafter…….referred to as the "Authority") of the one part and …… (Hereinafter "LSI") called the of the other part.

WHEREAS LSI has the required professional skills, personnel and technical resources, has agreed to provide the Services on the terms and conditions set forth in this Contract and is about to perform services as specified in this RFP ……..(hereinafter called "works") mentioned, enumerated or referred to in certain Contract conditions, specification, scope of work, other sections of the RFP, covering letter and schedule of prices which, for the purpose of identification, have been signed by …….. on behalf of the ……..
LSI and …….(the Authority) on behalf of the Authority and all of which are deemed to form part of the Contract as though separately set out herein and are included in the expression "Contract" whenever herein used.

NOW, THEREFORE, IT IS HEREBY AGREED between the parties as follows:

a. The Authority has accepted the tender of LSI for the provision and execution of the said works for the sum of ……..upon the terms laid out in this RFP.
b. LSI hereby agrees to provide Services to Authority, conforming to the specified Service Levels and conditions mentioned
c. The following documents attached hereto shall be deemed to form an integral part of this Agreement:

Complete Request for Proposal (RFP) Document	*Volumes I, II and III of the RFP and corrigendum and addendum, if any*
Break-up of cost components	*Bidder's Commercial bid*
The Authority's Letter of Intent dated <<>>	*To be issued later by the Authority*
LSI's Letter of acceptance dated <<>>	*To be issued later by the SI*
Bid submitted by LSI as per file No. <<>>	*Bidder's Technical bid*

d. The mutual rights and obligations of the "Authority" and LSI shall be as set forth in the Agreement, in particular:

- LSI shall carry out and complete the Services in accordance with the provisions of the Agreement; and
- The "Authority" shall make payments to LSI in accordance with the provisions of the Agreement.

NOW THESE PRESENTS WITNESS and the parties hereto hereby agree and declare asfollows, that is to say, in consideration of the payments to be made to LSI by the Authority as hereinafter

mentioned, LSI shall deliver the services for the said works and shall do and perform all other works and things in the Contract mentioned or described or which are implied there from or there in respectively or may be reasonably necessary for the completion of the said works within and at the times and in the manner and subject to the terms, conditions and stipulations mentioned in the said Contract.

AND in consideration of services and milestones, the Authority shall pay to SI the said sumof ……or such other sums as may become payable to SI under the provisions of this Contract, such payments to be made at such time and in such manner as is provided by the Contract.

IN WITNESS WHEREOF the parties hereto have signed this deed hereunder on the dates respectively mentioned against the signature of each.

Signed		Signed	
Name	: _____	Name	:_____
Designation	: _____	Designation	: _____
Date	:	Date	:
Place	:	Place	:
in the presence of :		**in the presence of :**	
Signed		Signed	
Name	: _____	Name	:_____
Designation	: _____	Designation	: _____
Date	:	Date	:
Place	:	Place	: