WEBEL TECHNOLOGY LIMITED

NOTICE INVITING e-TENDER

e-Tender is invited for OEM or System Integrator for "Supply, Installation, Commissioning and Maintenance of Integrated City Command and Control system for New Town Kolkata Green Smart City Corporation Ltd. (NKGSCCL)" having technical specification as detailed below in relevant section

OEMs /Reputed System Integrators must have sufficient experience and credentials for successful completion of "**Similar Nature**" of work in a Government Department/PSU/Autonomous Body or any Corporates. Bidder must have adequate Service Engineer for providing on-site support service within the stipulated time as prevalent for ICCC setups.

1	Tender No. & Date	WTL/NKGS/ICCC/20-21/013 dated 18.12.2020
2	Tender Version No.	1.0
3	Brief description of Job	Supply, Installation, Commissioning and Maintenance of integrated City Command and Control system for NKGSCCL
4	Tender Fee	Rs. 10000.00 (Rupees Ten Thousand Only). The amount to be transferred electronically as per the details given in Clause – 9, Section - D.
5	Earnest Money Deposit	Rs. 8000000.00 (Rupees Eighty Lakhs Only)). EMD to be submitted in the form of Bank Guarantee. Format of Bank Guarantee in Section - R
6	Date of Downloading	18.12.2020
7	Pre-Bid Meeting date & time	28.12.2020 at 12.00 Hrs. (On-Line Meeting) • Pre-Bid meeting will be organizing online platform only. Only queries as per format (Section - N) reaching WTL by 24.12.2020 at 15.00 Hrs. will be taken for decision. Interest bidders are requested to send mail to purchase@wtl.co.in in for participation of online pre-bid meeting. Based on request WTL will share meeting id / links for meeting. If there is any change in date and time then will inform. • Only queries as per format (Section - N) reaching WTL by 24.12.2020 at 17.00 Hrs. will be taken for decision. • Queries will be sent to Manager (Purchase) (purchase@wtl.co.in)
8	Bid Submission Start date & time	01.01.2021 at 14.00 Hrs.
9	Last date & time of EMD BG & Tender Fee submission of intimation	08.01.2021 at 14.00 Hrs.
10	Last date & time of Bid Submission	08.01.2021 at 12.00 Hrs.
11	Date & time of Technical Bid Opening	11.01.2021 at 12.00 Hrs.
12	WTL Address	WEBEL TECHNOLOGY LIMITED (A Govt. of West Bengal Undertaking) Plot - 5, Block – BP, Sector – V, Salt Lake City, Kolkata – 700091.
13	WTL Contact No.	033-23673403-06

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1. Intending bidder may download the tender documents from the website **https://wbtenders.gov.in** directly with the help of Digital Signature Certificate. Necessary cost of tender fee may be remitted through electronically and also to be documented through e-filling. Cost of Earnest Money Deposit (EMD) may be remitted through electronically and also to be documented through e-filling. The remittance details against Tender Fee & Earnest Money Deposit (EMD) should be emailed to the Manager (Purchase) & Manager (Finance), Webel Technology Limited, Plot – 5, Block – BP, Sector-V, Salt Lake City, Kolkata-700 091 on or before 14:00 Hrs. of 08.01.2021. The details given in Clause – 9, Section – D.

2. Both Techno Commercial Bid and Financial Bid are to be submitted concurrently duly digitally signed in the website **https://wbtenders.gov.in**

3. Tender documents may be downloaded from website and submission of Techno Commercial Bid and Financial Bid will be done as per Time Schedule stated in Section – C of this Tender Document.

4. The Financial Bid of the prospective Bidder will be considered only if the Techno Commercial Bid of the bidder is found qualified by the Tender Committee. The decision of the 'Tender Committee' will be final and absolute in this respect. The list of Qualified Bidders will be displayed in the website.

5. All clarifications/ corrigenda will be published only on the WTL / https://www.wbtenders.gov.in website.

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CONTENTS OF THE TENDER DOCUMENT

The Tender document comprises of the following:

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SECTION – A

INTRODUCTION & SCOPE OF WORK

1.1 Introduction:

With the onset of greater demand of urbanization and automatic requirement of fulling one of the "basic needs" of human being – "dwelling place" & also commercial spaces which will be required for the substance of the habitats of the region; the New Town, Kolkata was created in the eastern outskirts of Kolkata for the following dual prime reasons:

- establishing new business centre to reduce the mounting pressure on the existing Central Business Districts (CBD) and
- increasing housing stock supply by creating new residential units.

The New Town Kolkata NKGSCCL has been constituted under The New Town Kolkata NKGSCCL Act, 2007 (The West Bengal Act XXX of 2007) for rendering various civic services and amenities within New Town, Kolkata and it has come into effect since November, 2008.

The area of entire township is comprised of 34 Mouzas (both part and full) falling in areas of Airport Police Station, Rajarhat Police Station and Kolkata Leather Complex Police Station.

In order to meet the deficiencies of the present backend support system, namely, lack of integrated systems, repetitive work procedures, lack of real-time and accurate databases, lack of data sharing, etc., ICT initiatives such as the Integrated Command and Control Centre along with smart features with specific focus on real time monitoring / tracking of services, incidence response mechanism, integration of exsisting IIoT sensors which would be presented in conjuncture of analytics for aiding the decision support system , Municipal Services and many more have been envisaged by the NKGSCCL. This document covers the scope, intended technologies & schematic representations for the ICT initiatives of Integrated Command and Control Center (ICCC) and Project Management Strategy.

Building intelligence into the system which otherwise which apparently looks a conglomeration boxes; brings in the convergence of technologies providing a synergetic transformation in the NKGSCCL's experience in their day -to day operations. The backplane of the ICCC technology framework includes integration of CCTV feeds, Public Facility Management, Municipality Services, Health centre data, Public restroom feedback, info from the Smart lighting, grievance handling, sensing technologies like GPS tracking, inherent collaborative analytics and FAQ based information service – to name a few. Outputs as well as the analytics derived from all these technologies working in silos can be projected in the ICCC for an improved DSS

The possibilities are enormous in terms of creation of the ICCC, with the NKGSCCL proposing to lay the foundation by implementing various state-of -the-art analytic solutions to provide dynamic information to the citizens regarding various citizen centric services falling under governance segment of NKGSCCL. ICCC will automatically result into reduced decision making time, increased accessibility of the system data on a real-time, increased safety of the citizens, reduced operational costs, improved response efficiency, reduce cross talk congestion, improved environmental quality and energy efficiency. This Detailed Project Report (DPR) addresses the creation of the Integrated Command Control Centre (ICCC) in NKGSCCL.

Backdrop

One of the most daunting problems faced by the country is the effect of delay time of the "Good Governance". That is the basic need of having all the system converging at a single decision making centre; so that immediate "Role" based

decision can be initiated. All stakeholders of different solutions sit in a common secured place with the analytics viewed on the large screen.

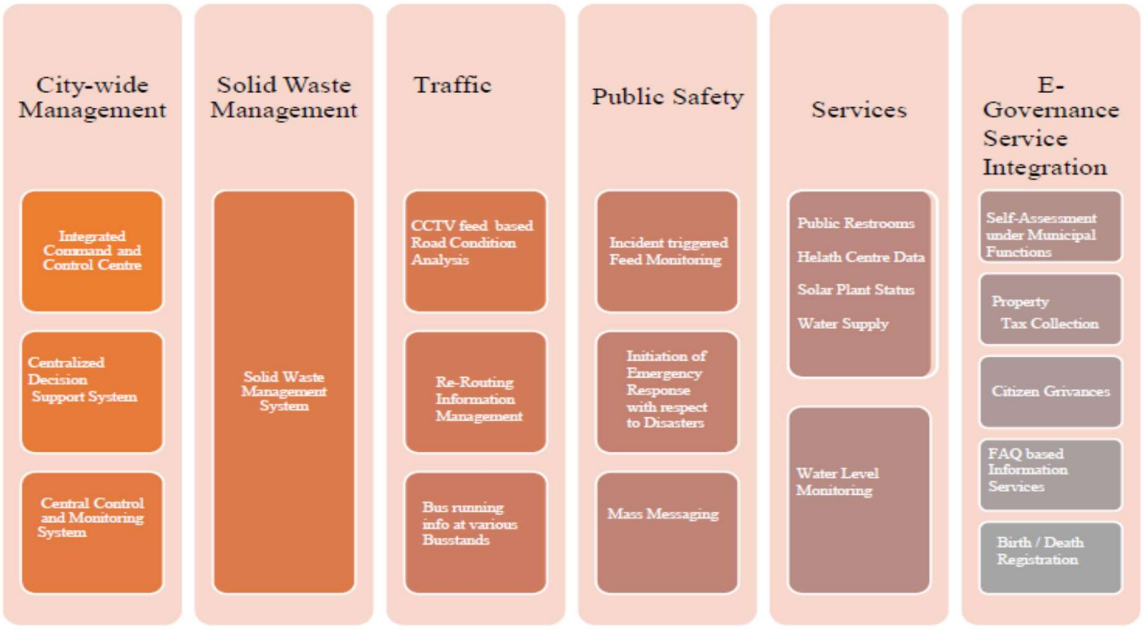
Primarily, preparation of a DPR on the ICCC for NKGSCCL which has been assigned to WTL, limits its scope to the indicative verticals which NKGSCCL may think of integrating and the infra requirements of the ICCC.

Vision

The key objective of this project is to establish a collaborative framework where input from different line departments of NKGSCCL such as traffic, City Surveillance, Disaster Management, etc. can be assimilated and analysed on a single viewable platform; consequently resulting in aggregated NKGSCCL level informations. Further this aggregate real-time information can be converted to actionable intelligence, which would be propagated to relevant stakeholders and citizens. Following are the intangibles that should be addressed by this intervention:

- Better management of utilities and quantification of services
- Disaster Management and Emergency Response System
- Efficient Citizen Relationship Management
- Enhanced aid to safety and security
- Real Time Asset Tracking
- Integration with existing control centres and other systems in NKGSCCL (with provision for future scalability)
    - Smart Governance,
    - CCTV feeds,
    - Health Centre Data,
    - Grievance Cell,
    - Municipal Services,
    - LoRAWAN based Streetlighting System

Components expected for information drop in ICCC



- Feeds from various sensors (environment and weather sensors) throughout the NKGSCCL jurisdiction for improved situational awareness

- Deployment of Public Addressal System / Mass Messaging with Helplines to enhance public awareness and emergency response.

- Deployment of Various Cameras NKGSCCL limits to improve various civic services including pinpointing violations with evidence.

- Deployment of Variable Messages Signboards for Public Information Display.

The Existing Systems: Integration Opportunities

- NKGSCCL has many existing – System and need to focus on added benefit from integration of system into a single system data sharing and operational "platform" – effectively the "Data Model" or "Data hub". Hence the ICCC will have a DC setup in its backend (WBSDC will act as the DC here)to support the visualization stubs for the stakeholders within the ICCC
- The existing systems are yet to fully integrate all the data and output channel it could use. The opportunity to integrate multiple sub -systems like Municipal Services , Grievance Management, Sensor output management, Mass Messaging systems to name a few are considered here as the major requirement.
- Based on the understanding of the existing systems & probable scalable / new systems it is important to have an integrated City Command and Control system in place to provide the best in class services of Infrastructure to the citizens under the jurisdiction of NKGSCCL.

The Need

- The city needs to establish governance processes which enable technology and digital assets to managed city wide resources on a real time basis through the Integrated City Command and Control Centre. In order to setup ICCC city need to do an agile integration considering the following areas:
- Ensure all the systems are working to their optimum in terms of use data from other systems and exporting information for wide use – in line with open data policies. A good example here is making the most of the strategy selection tool in the city traffic system, which can take input from variety of yet untapped source and system.
- Identify the important parameters of the system to add for integration with master systems
- Enables integration with different systems such as Emergency response system
- 2D / 3D locational intelligence and analytics with time series analysis for Operations planning and management
- Prebuilt KPI Manager with role-based configurable / customizable Smart City Operations dashboards

Benefits envisaged

ICCC enables collation of information and collaborative monitoring, thus helping in the analysis of data for quicker decision making. Intelligent operations capability ensures integrated data visualization, real-time collaboration and deep analytics that can help different stakeholders prepare for exigencies, coordinate and manage response efforts, and enhance the ongoing efficiency of city operations. The interface at ICCC gives a real-time and unified view of operations. Cities can rapidly share information across agency lines to accelerate problem response and improve project coordination. Furthermore, the ICCC will help in anticipating the challenges and minimizing the impact of disruptions.

Following are the benefits envisaged from ICCC:

- ✓ Enable real time monitoring of the various facets of management of NKGSCCL i.e. Security, Traffic and other Utilities

- ✓ Provide capability to respond in a unified manner to situations on ground (both day to day and emergency situations) by creating a common operational picture for the relevant stakeholder

- ✓ Provide and manage touch points from all concerned stakeholders during the lifecycle of various incidents
- ✓ Define and manage the Key Performance Indicators (KPIs) for various operational aspects of the City Management
- ✓ Provide capability to conduct analysis for continuous improvement of city operations

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

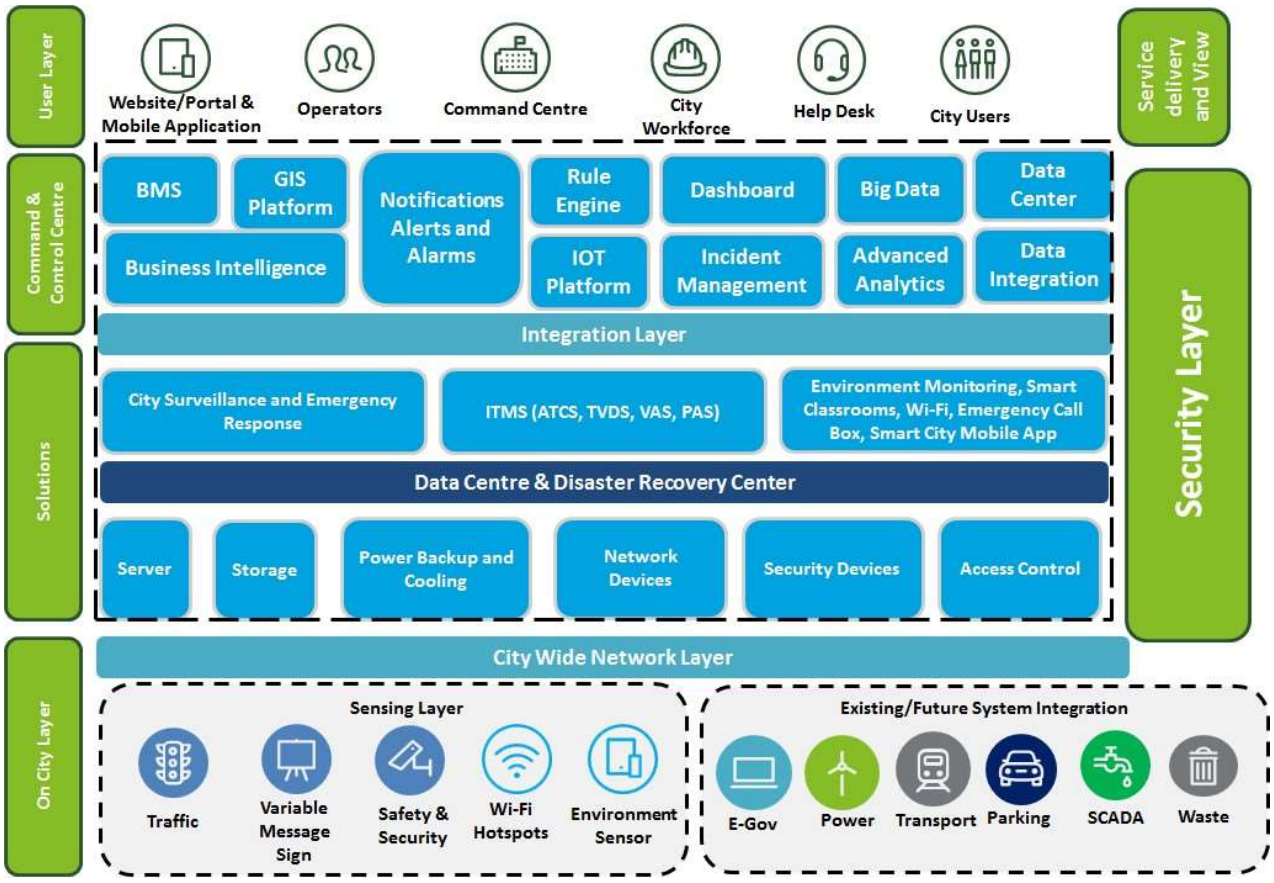
Feature	Objective	High Level Scope

Integrated Command and Control Center (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 NKDA
	• 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
	• ICCC will enable city administration and its stakeholders in the following:
	  • Effective decision making
	  • Delivering effective governance by aggregating various data feeds from
		Setting up city ICCC with around 8 -12 operators control room and operations and maintenance of the command center for contract duration.

	sensors and systems • Providing interface/ dashboards to generate alert & notifications in real time • Quick and effective response to emergency or disaster situation	

1.2 SCOPE OF WORK

The Master System Integrator shall be responsible for implementing an end to end solution for city of New Town, Kolkata which comprises the following:



Sensor and Actuator layer

The sensor layer will help the city administration gather information about the ambient city conditions or capture information from the field level devices like emergency call boxes, cameras, etc. located across the city. New Town city is expected to have multiple environmental sensors across the city, to measure ambient conditions such as light intensity, temperature, air pollution, noise pollution and humidity.

Network Layer

The secured network layer will serve as the backbone for the project and provide connectivity to gather data from sensors and post analysing, communicate messages to display devices and actuators. It will support the secured communication services for smart elements (sensors and displays) at given locations. The network layer will be scalable such that additional sensors, actuators, display devices can be seamlessly connected via wired network or Wi-Fi network or any other secure standard connectivity method in future.

Data Centre Layer

The data centre layer is to be hosted at the State Data Centre at Monibhandar. The data center layer will house centralized computing power required to store, process and analyse the data to decipher actionable information. This layer includes servers, storage, ancillary network equipment elements, security devices and corresponding management tools. Similar to the network layer, it will be scalable to cater to the increasing computing and storage needs in future.

Smart Application and Integration Layer

The smart 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. It will be an evolving layer with applications added and integrated as and when new applications are developed. 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 underlying architecture components and other data from systems developed by government (such as Municipal Corporation of New Town, police department, state pollution control board, street lights department, water department, irrigation department within New Town, etc.) and quasi/ non-government agencies.

Service delivery and consumption Layer

This 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 CCTV cameras, adaptive traffic signals, digital messaging boards, environmental data displays, etc.

Control Units & Command Center Layer

The command center and control units will enable citizens and administrators to get a holistic view of city conditions. Such control units will take shape of either an exhaustive command center or control applications which can be viewed over a web browser or available in form of a mobile application. The implementation vendor will have to develop a command center at a site location determined by NKGCCL and web/ mobile based viewing tools for securing a holistic view of city conditions.

Security Layer

As ambient conditions, actuators and display devices are now connected through a network, security of the entire system becomes of paramount significance and the overall system/solution will have to include:

- 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, authorisation, 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 (GOI) for various e-Governance applications
- End device security, including physical security of all end devices such as CCTV cameras, adaptive traffic signals, digital messaging boards, environmental data displays, emergency call boxes etc.
- Following security parameters should be included for all smart elements, but not limited to:
  - Identity and access management
  - 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 network/ public Wi-Fi Devices

Survey and Detailed Design of all Smart Solutions

MSI (Master System Integrator) shall conduct end-to-end survey of the site area, additional requirement gathering and based on the observations, asses and validate the present conditions, implementation approach and methodology, project challenges and mitigations and other project critical information. During the survey stage itself, MSI shall mobilize its entire staff and fully acquaint them with the site conditions. The MSI will survey the sites and assess conditions for planning and designing the implementation. During the design validation stage, MSI is also expected to:

- Conduct workshops with different stakeholders for capturing business requirements, creating awareness of best practices, communicating the changes, building consensus on process design etc. These needs to be organized at different intervals and in different places throughout the duration of the projects as needed.
- Hold stakeholder consultations other than workshops, with those stakeholders who will be identified by NKGCCL, for critical inputs, review, suggestions, process description etc.

- The components mentioned in BOM are indicative, MSI has to optimize the requirement based on network design. The RFP is based on outcome of the scope and is not based on BOM.
- MSI needs to ensure delivery of the outcome as outlined in the scope of work and should consider all the relevant items in the BOM for achieving the same. No additional cost shall be borne later by the Client for any item which has not been considered during bid submission for achieving the desired outcome.
- Non required components based on final design accepted by NKGCCL should not be procured.
- Conduct review sessions with different stakeholders for signing off the deliverables, walking through the deliverables for facilitating quick understanding.
- For network connectivity, the MSI shall carry out a gap analysis in order to capture the WAN and Local connectivity requirements. The analysis should also cover the detailed network related requirements of IT and Non IT infrastructure at each location.
- Conduct detailed survey for implementing smart elements across the city, prepare detailed survey and design report, submit the same to NKGCCL for approval.

The MSI shall also be responsible for obtaining necessary concurrence on the detailed project design. MSI shall discuss in detail and validate with the Client or its representatives the detailed design of the smart city ICT components and fine tune any requirements. It is the MSI's responsibility to satisfy the operational requirements of the Client and adopt industry best practices for implementation during the design stage itself. Based on the survey observation, analysis and discussions with NKGCCL, the MSI shall submit a Detailed Design Report. The detailed design report shall include end-to-end design validation for the project including any project understanding, analysis, detailed design, integration plan, and for-construction drawings. Complete set of design and construction drawing including method of installation as applicable shall also be included in the Detailed Design Report. Construction details shall accurately reflect actual job conditions.

All technical data sheets of the products should be submitted ahead of time by the MSI. It is MSI's responsibility to get all technical data sheets approved by NKGCCL or its representative to meet the overall project schedule.

While designing the solution, MSI is expected to consider the aspect of scalability without any additional cost to add additional smart elements which may include the following:

- Integration of additional sensors/ IoT devices for future/ new requirements (As and when there is increase in the total devices connected) (e.g., AVLS, Smart Parking, SCADA integration with Downstream applications related to Water management, Electricity, Sewage etc.)
- Standards based integration for future/new requirements with applications like **e-Gov** applications and related apps, third party systems (Through Open API's for all additional Applications in future)
- Helping NKGCCL in finding solution for new challenges faced in day to day scenario by customizing the existing smart solutions.

The design of the entire Smart City Solutions (which would serve as a basis for implementation subsequently) should comply with Good Industry Practices and at a minimum follow the design principles and standards highlighted in Annexure-A

Design and construction drawings shall include the following at a minimum:

- All system device locations as required for installation, operation and maintenance
- Cable requirements, routing and location (as applicable)
- Typical mounting details
- Single Line Diagrams (SLDs)
- Splicing diagrams
- Wiring diagrams
- 3D layouts and renderings for POP and ICCC Hall
- Any other layouts including legacy equipment details, if any
- Any other requirement to meet the requirements of the RFP

All drawings shall be updated/revised to "as-built" conditions when installation is complete.
Design submissions shall be based on project requirements and shall include as applicable, but not limited to, the following:

- Complete listing of specifications to be used along with detailed technical data sheet

- Detailed engineering drawings
- Shop drawings including product data sheets
- Revisions to original design submissions

No work requiring shop drawing submission shall commence until final review has been obtained by Client. However, review of the shop drawings by the Client shall not relieve the MSI of its responsibility for detailed design validation inherent to shop drawings.

For the software components, MSI will create requirement analysis documents for various components of the solution. This includes System Requirements Specification (SRS) and Functional Requirements Specification (FRS) documentation. The MSI shall be responsible for documenting any existing/planned 'processes' of the Client as part of these deliverables.

This detailed design report shall be submitted to NKGCCL for all the phases of the project.

Prototype acceptance and factory testing

Post approval of the detailed design, MSI shall develop the prototype of all the components/solutions and obtain the Client's approval. It shall be MSI's responsibility to get the prototypes approved in due course of time without affecting the overall schedule of completion.

Components/solutions provided as part of the Project shall undergo Prototype Acceptance Test (PAT) and Factory Acceptance Test (FAT) as per Project Plan. Details regarding the PAT and FAT are presented in Testing Section of the Scope of Work. MSI shall also present to the Client and its representatives the test results for PAT and FAT in the form of Test Result Documentation presented in the Testing section. The client at its own discretion shall visit any FAT site. MSI shall be responsible for organizing all logistics required for this site visit. For all the software components, MSI shall also propose prototype of solution components in this phase and get the required approvals.

Hardware Supply and Installation

MSI shall be responsible for the supply and installation of all components as part of the smart city ICT components to meet the technical, functional, business and performance requirements of the RFP. No deviations from these requirements shall be acceptable by the Client. Any additional hardware or software component required to meet the technical and performance requirement of the project and not specified as part of this document but required to meet the overall requirements of the project shall be factored in as part of the Bid, and provided by the MSI. MSI shall deliver the project and install and handle the equipment in accordance with manufacturer's requirements. Installation process of the MSI shall be flexible and shall accommodate Client's requirements without affecting the schedule as specified in the RFP.

MSI shall be responsible for all supply, storage and handling of the material provided as part of the project. The OEM proposed for the IT infrastructure shall adhere to applicable national/ state security policies.

If there is removal/change of any existing material during installation process, the material shall be handed-over to the Client. It shall be the MSI's responsibility to supply and install all hardware in compliance with the requirements of the RFP. Proposing non-compliant system/solutions by MSI will lead to bid rejection. MSI shall be responsible for all implementation works on the project including any civil, structural, electrical, etc. works required to meet the requirements of the project. All power conversions necessary to operate the equipment shall be under the scope of MSI.

Software Development

MSI shall be responsible for development and deployment of all software required to meet the requirements of the project. Some of the software may be "Commercial Off-The-Shelf (COTS)" or may require bespoke development as outlined in the subsequent sections of this document. MSI shall be fully responsible for developing, implementing, integrating and maintaining all the software required for the project. All software development/implementation should be developed using standard Software Development Life Cycle (SDLC) with suitable checkpoints at the end of each activity and may be demonstrated to the client periodically as per the project requirements. All software shall be developed based on the approved software and functional requirements specifications. The technology platform chosen for all software shall be based on open standards and shall be secure. Migration of data shall be the responsibility of the MSI. MSI is required to take the source data in the format which is available. Subsequently, MSI is required to take complete ownership of data migration and also develop a detailed plan for data migration.

The MSI shall ensure that full support from the OEMs' are provided during the course of the contract. MSI shall be responsible to provide any upgrades, patches, fixes to the software during the course of the contract at no additional cost to the client.

Pilot Deployment

The MSI shall conduct Pilot deployment and testing for meeting Client's business requirements before rolling out the complete system. The pilot will be operated for four weeks to study any issues arising out of the implementation. MSI shall also review health, usage and performance of the pilot implementation until it has stabilized. Based on Client's feedback for incorporating changes as required and appropriate, MSI shall train staff involved in the Pilot implementation.

The Pilot shall be demonstrated to the Client's representatives. If for any reason during the pilot implementation, the solution or components thereof does not meet the client requirements, these will be communicated to the MSI in writing. A one-time extension will be provided to the MSI to correct the lapses pointed out before offering the upgraded pilot to Client for review. Failure to successfully demonstrate all required functionalities during pilot implementation shall lead to termination of the contract with no liability to Client.

Testing

All materials, equipment, systems, manufacturing or configuration processes, or other items to be provided under the Contract shall be inspected and tested in accordance with the requirements specified in this document and will be subject to Client or its representative's approval. The testing shall include any existing civil infrastructure equipment or materials to be taken over by the MSI. Approvals or passing of any inspection by the Client shall not, however, prejudice the right of the Client or its representative to reject the material if it does not comply with the specification or requirements of the RFP when erected or give complete satisfaction in service.

The MSI shall design and successfully complete tests to demonstrate that all equipment, materials and systems furnished and installed function in the manner intended and in full compliance with the requirements outlined in the RFP and the approved detailed design of the MSI.

All tests shall be subject to inspection or witnessing of tests by the Client or its representative. Inspection or witnessing of tests may be waived at the sole discretion of the Client or their representative, subject to the MSI furnishing the Client or their representative with properly completed test certificates in accordance with the requirements of the RFP. Failure of the Client or their representative to witness any test shall not relieve the MSI of the obligation to meet the requirements of the Contract.

MSI shall submit an Acceptance Test Procedures document (ATP), for Client's approval prior to undertaking any testing. The ATP shall clearly address:

- Type of testing and device to be tested;
- How each testable specification requirement will be demonstrated, including the test environment and set-up, specific functionality to be tested, method for performing the test and quality assurance procedures;
- The results that will constitute success for each test;
- Timing of test within the overall Contract schedule;
- The location for testing;
- Personnel required to conduct the test;
- Approximate time required to execute the test or set of tests;
- Responsibilities of both the MSI and Client's representatives during each test; and
- A cross-reference to which Contract requirements from the Compliance Matrix (to be developed by the MSI) are being addressed by each test procedure.

The ATP shall include an updated Compliance Matrix to include the test relevant stage at which each contract requirement will be demonstrated; and a cross-reference to the test procedure(s) that serve to address each contract requirement. The Compliance Matrix shall be used as a "punch list" to track which requirements have not yet been demonstrated at each stage of testing. A requirement classified as having been "demonstrated" during a certain ATP stage can be subsequently redefined as having been "not demonstrated" if compliance issues emerge prior to System Acceptance. ATP shall be submitted to Client at least three (3) weeks in advance of any intended testing.

All measuring instruments required to measure test parameters shall be calibrated by an approved testing authority. The equipment shall be inspected for standards of construction and electrical and mechanical safety.

Test results shall be recorded for all tests conducted under this Contract. The MSI shall make test results available to Client or their designate for review immediately after completion of the tests.

ATP for each test shall be collated, bound and delivered as part of the close-out documentation requirements specified herein.

ATP submission shall include a hard copy of the originally marked test results and a neatly typed summary. Two (2) hard copies and one (1) electronic copy shall be provided.

ATP shall incorporate the following distinct stages for each deployed component/solution:

- **Prototype Acceptance Tests (PAT):** Prototype Approval Test shall be conducted only on the customized component/solution for their design and compliance to functional specifications. PAT shall be completed before conducting FAT and only after approval of PAT by Client's representative, the solution shall go in production. PAT shall be witnessed by Client's representatives;

- **Factory Acceptance Tests (FAT):** FAT shall be conducted before the component/ solution is shipped to Client for installation, and deficiencies shall be rectified before shipping to Client for installation. All solutions furnished by the MSI shall be tested and subjected to a nominal 72-hours burn-in period at the factory. FAT shall be witnessed by Client's representatives at their discretion. Factory acceptance tests shall be conducted on randomly selected final assemblies of all equipment to be supplied. In case any of the selected samples fail, the failed sampled is rejected and additional 20% samples shall be selected randomly and tested. In case any sample from the additional 20% also fails the entire batch may be rejected;

- **Pre-Installation Testing (PIT):** All component/solution supplied under this Contract shall undergo pre-installation testing in accordance with the ATP. This shall include existing component/solution, any spare parts, any new component/solution provided by Client or their designate and new component/solution provided by the MSI.

  All PIT testing shall be carried out prior to installation of the component/solution. After satisfactory completion of the MSI's PIT tests, the MSI shall supply all test measurements and results to the Client or their designate, together with a Test Certificate.

  If the component/solution is considered a standard production item, the MSI may, with the prior consent of the Client or their designate, supply a copy of the component/solution manufacturer's quality control test results in place of a MSI performed test.

- **Installation Acceptance Tests (IAT):** IAT shall be conducted after each installation of each component/solution type, and deficiencies shall be rectified before the initiation of SAT. IAT may be witnessed by Client's representatives;

- **Proof of Performance Testing (POP):** The MSI shall implement a structured proof of performance testing, which will progressively place all components in service. Site tests shall be performed on individual components, subsystem sites, and the complete subsystems, as necessary to confirm that each element of the system functions satisfactorily and fulfils the requirements of this specification.
  Completion, submission, and approval of all relevant PIT and IAT tests and results must be completed prior to carrying out any POP tests.

  All subsystems and components shall be tested by the MSI regardless of whether or not it is a standard item.

  After satisfactory completion of the MSI's POP tests, the MSI shall supply all test measurements and results to the Client or their designate, together with a Test Certificate.

- **System Integration Testing (SIT):** The MSI is responsible for the proper and harmonious operation of all subsystems installed under this Contract. Where connections of the new systems to existing subsystems or equipment supplied by others are required, the MSI is responsible for connection of equipment specified in the Contract and for initial system integration tests. Such a test will verify the full functionality of each subsystem as

they are interconnected. This will require testing to be coordinated by the MSI with the Client or their designate. This work will be carried out under the direction of the Client or their designate.

Completion, submission and approval of all relevant PAT, FAT, PIT, IAT and POP tests and results must be complete prior to carrying out any SIT tests. The MSI shall:

- Complete all equipment and subsystem tests required in the Contract;
- Test each subsystem independently on the communications subsystem;
- Add subsystems one at a time and monitor the overall performance;
- Fail safe testing of all subsystems one at the time while monitoring overall systems performance.

A SIT certificate will be issued when all system tests have been completed satisfactorily, and the MSI has supplied a full set of Test Certificates and a Test Certificate for the complete system, together with final copies of all Operating and Maintenance Documentation for the System.

- **Stress and Load Testing:** Comprehensive stress and load testing of all component/solution shall be conducted to demonstrate robustness and reliability of the system.
- **Security Testing (including penetration and vulnerability test):** Security test shall be conducted to demonstrate security requirements at network layer and software applications. Components shall pass vulnerability and penetration testing for rollout of each phase. Components shall also pass web application security testing for portal, mobile app, and other systems. Security testing shall be carried out for exact same environment/architecture that shall be set up for go-live. Penetration test shall be carried out periodically and vulnerability analysis shall be carried half-yearly during maintenance phase. For all applications hosted on-cloud or hosted on premises, the security testing shall be a mandatory requirement.
- **Pilot Test:** Requirements for Pilot Test is explained in the Pilot Deployment Section of the Scope of Work.
- **System Acceptance Tests (SAT):** SAT shall be conducted after the entire system has been installed, integrated and commissioned. Deficiencies, if any shall be rectified before the initiation of Burn-in Test. SAT shall be conducted on full system completion only to determine if the system functional and technical requirements as specified in the bidding documents are met. SAT shall be witnessed by Client's representatives. Data migration, if any will be carried out by MSI prior to commencement of this stage. SAT shall also include any performance and load testing for the software applications.

  SAT should include End to End (E2E) Testing which shall be conducted to certify the implementation of business processes in its entirety. E2E testing will cover all business flows and connectivity with all the interfacing systems. No mock setup will be used for integrations during the testing phase, since all the interfaces are expected to be available for validations. The test scenario matrix will need to be prepared that provide details of the following:
  - Detailed description of the scenario with the associated business process across Upstream Applications & Downstream Applications
  - All Applications, interfaces listed in scope of the program – a checklist to indicate whether the scenario will traverse through the identified system(s)

The entry/exit criteria for the SIT and E2E testing and its deliverables are provided in the table below:

Entry Criteria	Exit Criteria	Deliverables

• System Integration Testing complete for all interfacing applications • E2E Test scenarios / cases are reviewed and signed off by SMEs (Subject Matter Expert)/ SPV • No blocker / critical defects in open status from ST/SIT phases • Known defects (open status) are documented clearly from ST/SIT phases	• 100% of planned test cases are executed and test results are documented • 100% pass rate on executed test cases • No blocker / critical defects in open status • Known defects (open status) are documented clearly • Sign off on the test results	• End to end test scenarios and test cases • End to end defects report • End to end test execution evidence • End to end test summary report

- **Burn-in Tests (BT):** Following successful completion of the SIT and SAT, the approved System will be put into service and its performance monitored for a period of thirty (30) consecutive calendar days for the purpose of verifying system reliability in an operating environment. Any failures and defects occurring in this time will be documented. Any serious defects which affect the availability of the system will be a basis for restarting the test. Upon the satisfactory completion of this performance testing, a Completion Certificate will be issued.

The MSI shall not commence BT until SIT and SAT have been performed and successfully completed and all documentation of the successful completion of PAT, FAT, PIT, IAT, POP, SIT and SIT, along with notification of the schedule date of the BT is provided to the Client or their designate in accordance with the requirements. Commencement of BT will be conditional on the Client or their designate providing written notification of Client's readiness to proceed to BT.

The MSI shall be suitably prepared for the BT prior to the start date. Repeated failure of the BT may result in the MSI having to reimburse the Client or their designate for costs incurred. No compensation to the MSI will be made for repeat testing.

Where equipment supplied by the MSI fails during the burn-in period, the MSI shall restart the test at day zero (0) following appropriate corrective measures.

If a utility failure is proved to be the cause of testing failure, then the MSI shall restart the fourteen (14) day burn-in test at the day the failure occurred. If a subsystem failure is proved to be the cause of testing failure, then the MSI shall start the test over at day 0 (zero).

Where tests or burn-in indicate that an existing subsystem or component, not provided by the MSI, is defective, the MSI shall immediately report the deficiency to the Client or their designate. The Client or their designate may assign corrective repairs, retesting and repeat of BT to the MSI, in accordance with the changed provisions of the Agreement.

The MSI shall provide the Client or their designate with a contact name and phone number(s) for a designated emergency contact person during BT. The emergency contact person shall be accessible twenty-four (24) hour a day, for each day of testing.

- **Operational Acceptance Test:** Shall be conducted after successful SAT and Burn-in tests. Continuous fault free running of the System shall be tested. Post the completion of Operational Acceptance Test, System shall be considered for Operational System Acceptance and Defect Liability Period (DLP) shall commence. Operational Acceptance Test shall include the following as a minimum:
  - Completion of all activities and fulfilment of all business, functional and technical requirements listed in RFP;
  - Scrutiny of all inspection reports, audit findings, Contracts, licensing agreements etc.;

Client may authorize the MSI to proceed to the next testing stage with certain deficiencies not yet resolved.

In case of failure of any component, the component in question shall be repaired and the test shall be reconducted. If a component has been modified as a result of failure, that component shall be replaced in all like units and the test shall be reconducted for each unit.

MSI shall provide the Client with a copy of the manufacturer's quality assurance procedures for information. Documentation certifying the showing that each item supplied has passed factory inspection shall also be submitted by the MSI.

The MSI shall provide written notice to Client at least five days in advance of any testing, indicating the specific tests to be completed as well as the date, time and location. The MSI shall be required to reschedule testing if Client witnessing representatives cannot be present or if other circumstances prevent testing from taking place.

MSI shall provide written Test Results Documentation (TRD) within one week of completing each stage of testing. The TRD shall document the results of each ATP procedure and provide an updated Compliance Matrix that indicates which contract requirements have been demonstrated. The TRD must be approved before Client will grant System Acceptance. A sample format for the TRD is provided below:

Item #		**Test:**	
Item Description		**Date:**	
Test Set-up:			
Clause	**Test Procedure**	**Expected**	**Actual Results**
		Results	
Witnessed (This Does Not Constitute Approval): **Reviewed and Approved:**			

MSI shall be responsible to carry out all the testing as per the satisfaction of the Client and its representatives. All costs associated with any testing are to be borne by the MSI including the costs of travel and accommodation of the Client or its representatives from their home locations in their cost bid. A maximum of three (3) people shall be nominated by the Client to attend any such testing wherever it is carried out.

System Integration

MSI shall be responsible for the integration of all hardware and software supplied as part of this Project as per the technical and performance requirements of the project. The system integration scope also includes integration of the Project components with the components provided by others as per the details of the RFP. It shall be the responsibility of MSI to take approval of the Client for the Integration of the overall system as per the RFP. Post systems integration, the Client shall review and approve the overall performance of the integrated system as per the requirements of the RFP. MSI shall be responsible for fixing any requirements that are not found in compliance with the original RFP and approved detailed design at no additional cost to the client within the agreed SLA.

Project Management

MSI shall be responsible for providing end to end project management for implementation and maintenance of the smart city ICT components. MSI shall deploy team of experts for project management.

The Project Manager shall be the single point of contact and shall assume overall responsibility of the Project to ensure end to end working of the Project. The Project manager shall function as the primary channel of communication for all Client requirements to the implementation team. In case of any absence of the project manager (vacation or

sickness), the MSI shall ensure that an alternate project manager (of similar or better qualification) is present on site during the absence period of the proposed Project Manager.

MSI shall be responsible for preparing a master schedule of work which shall highlight implementation plan for all the Project milestones. The schedule shall identify manufacture, delivery, installation, integration of equipment (Software and Hardware), training programs, test procedures, delivery of documentation for respective solutions and final handover. The schedule shall also show Client and any third-party responsibilities along with the activities in the timeline. MSI shall conduct bi-weekly meetings between the Client (and / or its representative) and the 'key personnel' to discuss project progress and implementation at desired location. All key personnel associated with the project shall also be available for meetings whenever asked by the Client or its representative.

MSI shall also be responsible for effective risk and issue management and escalation procedures along with matrix as part of project management. MSI shall identify, analyses, and evaluate the project risks and shall develop cost effective strategies and action plan for mitigation of risks. As part of the Project, MSI shall monitor, report and update risk management plans which shall be discussed during project meetings.

MSI shall prepare minutes of every meeting which takes place and submit to Client or its representative for tracking of the Project. MSI shall propose a suitable progress reporting mechanism for the project duration.

All the tools required by MSI for project management, configuration management, issue and risk management, escalation procedure and matrix document repository etc. shall be factored in the proposal submitted by MSI.

Based on progress reports, MSI shall also accordingly update the master schedule of work on a continuous basis during the period of the contract.

Change Management and Training

In order to strengthen the staff, structured capacity building programmes 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 New Town Smart City, (NKGCCL) 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 ICCC. These officers shall be handling emergency situations with very minimal turnaround time.

- MSI shall prepare and submit detailed Training Plan and Training Manuals to purchaser/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.
- MSI shall be responsible for necessary demonstration environment setup including setup of cameras, WiFi and other required solutions to conduct end user training. End user training shall include all the equipment including but not limited to all the applications and infrastructure at ICCC, ITMS, Safety and Surveillance, DC and other smart solutions. End user training shall be conducted at a centralized location or any other location as identified by purchaser with inputs from the MSI.
- MSI 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.
- MSI shall impart operational and technical training to internal users on solutions being implemented to allow them to effectively and efficiently use the surveillance system.
- MSI shall prepare the solution specific training manuals and submit the same to purchaser for review and approval. Training Manuals, operation procedures, visual help-kit etc. shall be provided in English language.
- MSI shall provide training to selected officers of the purchaser covering functional, technical aspects, usage and implementation of the products and solutions.
- MSI 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 prepared and shared with the Client along with complete details of content of training, target audience for each year etc.

- MSI 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 MSI 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 MSI.
- 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 MSI.
- Time Schedule and detailed program shall be prepared in consultation with RMC and respective authorized entities (like Police Department, OPCB among others). In addition to the above, while designing the training courses and manuals, MSI 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.
- MSI 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.
- Client shall be responsible for identifying and nominating users for the training. However, MSI shall be responsible for facilitating and coordinating this entire process.
- MSI shall be responsible for making the feedback available for the Client/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 MSI shall re-conduct the same training at no extra cost.

Types of Trainings

Following training needs are identified for all the project stakeholders:

Basic IT training:

This module shall include components on fundamentals of train the trainer basis:

- Computer usage
- Network connection troubleshooting
- Smart phone/ Tab usage with respect to smart city solutions
- Application user administration
- Application installation & troubleshooting Basic computer troubleshooting etc.

Initial Training as part of Project Implementation:

- Functional Training
    - Basic IT skills
    - Video Management Software, Video Analytics, etc.
    - Software Applications (Integrated Command & Control Center)
    - Mobile Surveillance Vehicle
    - Mobile Command and Control Center (Integrated Command & Control Center over field devices)
    - Networking, Hardware Installation
    - Centralized Helpdesk
    - Feed monitoring
    - Any other relevant training Administrative Training
    - System Administration Helpdesk, Facility Management System (FMS), Building Management System (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

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
- Training to the employees of New Town Smart City Limited and it's appointed agencies on application related operations and basic troubleshooting & reports generation etc.

MSI will have to bear all the cost associated with the conducting such training programs. However, the space for such trainings shall be provided by the Client

Training sessions should be conducted on a requisite mix of theory & practical operations. The trainings should be conducted in English, Bengali and Hindi languages as applicable.

Initially the bidder will be required to impart training to the personnel designated (approx. 20 nos.) by New Town Smart City Ltd. for one month, thereafter a similar training will be repeated once every quarter for the contract duration.

MSI has to provide application and role based training to the ICCC operators and supervisors of different applications like VMS, ICCC, Video Analytics and forensic Software

Full Deployment, Documentation and Handover

Post the final deployment, MSI shall handover detailed documentation that describes the site conditions, system design, configuration, training, as-built conditions, operation and maintenance. All documentation shall be in English, shall utilize metric measurements, and shall be submitted directly to Client in paper hardcopy and electronically in Word/ AutoCAD/ Excel/ Project and Adobe Acrobat.

All installation drawings shall be prepared in AutoCAD, GIS and Adobe Acrobat and provided on CD-ROM as well as hard copies. The drawings shall contain sufficient detail including but not limited to equipment dimensions, interfaces, cable details, equipment mounting and fire protection.

Electrical and electronic drawings shall be supplied to show engineering changes made to any component or module any time during the contract period.
The MSI will provide documentation, which should follow the ITIL (Information Technology Infrastructure Library) standards. The indicative documentation to be submitted across various stages of implementation are as follows:

- **Project Commencement Documentation:** Project Plan in giving out micro level activities with milestones & deadlines.
- **Cabling Layout:** Systems Integrator shall submit the detailed cabling layout including cable routing, telecommunication closets and telecommunication outlet/ connector designations. The layout shall detail locations of all equipment and indicate all wiring pathways.
- **Equipment Manuals:** Original Manuals from OEMs.
- **Installation Manual:** For all the application systems
- **Training Material:** Training Material will include the presentations used for trainings and also the required relevant documents for the topics being covered. Training registers should be submitted for same.
- **User Manuals:** For all the application software modules, required for operationalization of the system.
- **System Manual:** For all the application software modules, covering detail information required for its administration.
- **Standard Operational Procedure (SOP) Manual:** The Bidder shall be responsible for preparing SOP Manual relating to operation and maintenance of each and every service as mentioned in this Tender. The draft process (SOP) document shall be formally signed off by Authority before completion of Final Acceptance Test. This SOP manual will be finalised by the Bidder within 2 months of operationalisation of each phase, in consultation with the Authority and formally signed off by the Authority.
- An inventory of all components supplied (Hardware, Software, Other equipment's including physical fitments) including model name, model number, serial number and installation location

- All reference and user manuals for system components, including those components supplied by third parties
- All warranties documentation, including that for components supplied by third parties
- As-built in CAD and GIS
- A diagram indicating the as-built inter-connections between components
- Software documentation which also includes the version number of all software, including that supplied by third parties
- Cable run lists and schedules
- All network and equipment details such as IP addresses, user names, and passwords
- Manufacturer's test procedures and quality assurance procedures for information Data communication protocols
- As-Built' drawings for all components installed.

MSI shall submit to the Client copies of comprehensive operating and maintenance manuals for all systems and hardware supplied as part of this bid document. The manuals shall be complete, accurate, up-to-date, and shall contain only that information that pertains to the system installed. Maintenance documents shall include: Equipment installation and operating documentation, manuals, and software for all installed equipment

- System Installation and setup guides, with data forms to plan and record options and configuration information
- The schedule/procedures for preventative maintenance, inspection, fault diagnosis, component replacement and on-site warranty support administration on each system component
- Hard copies of manufacturer's product specification sheets, operating specifications, design guides, user's guides for software and hardware, and PDF files on CD-ROM or non-volatile memory stick of the hard-copy submittal
- Complete list of replaceable parts including names of vendors for parts not identified by universal part numbers
- Manufacturer's product specification sheets, operating specifications, design guides, user's guides Permits
- Contractor names and telephone number, email address, escalation matrix with contact lists for all project trades.

MSI shall provide Systems Manuals (SM), documentation including:

- The configuration and topology of central systems hardware and software
- Central systems software functions and operations
- Scheduled maintenance required for the central systems Database structure and data dictionary

MSI shall also provide following documents for any be-spoke software development, if any:

- Business process guides
- Program flow descriptions
- Architecture details
  - System Architecture
  - Technology Architecture
  - Deployment Architecture
  - Data Architecture
- Data model descriptions
- Sample reports
- Screen formats
- Frequently Asked Questions (FAQ) guides
- User Manuals and technical manuals
- Any other documentation required for usage of implemented solution

Documentation of processes shall be done using standard flow-charting software.

All pages of the documentation shall carry a title, version number, page number and issue date, and shall contain a complete subject index. MSI shall be responsible for fully coordinating and cross referencing all interfaces and areas associated with interconnecting equipment and systems.

Documentation shall require re-issues if any change or modification is made to the equipment proposed to be supplied. MSI may re-issue individual sheets or portions of the documentation that are affected by the change or

modification. Each re-issue or revision shall carry the same title as the original, with a change in version number and issue date.

Each volume shall have a binder (stiff cover and spine), and drawings shall be protected by clear plastic to withstand frequent handling. The binding arrangement shall permit the manual to be laid flat when opened.

Soft copies of the above documents (Word, pdf, Visio etc..,) has to be provided by MSI.

The paper used shall be of good quality and adequate thickness for frequent handling.

Operations Related Documentation

The MSI shall support NKGCCL in (not limited to)

- Preparing the reports/documents generated as per the end user requirement
- Exporting the same in standard format (pdf, csv, xlsx, doc, JSON objects etc.,)
- Printing the required reports

Note: MSI will ensure upkeep & updation of all documentation and manuals during the contractual period. The ownership of all documents, supplied by the MSI, will be with the Client. Documents shall be submitted in two copies each in printed (duly hard bound) & in softcopy formats.

Operational System Acceptance

Post go live, the system shall be considered for operational system acceptance. At the close of the work and before issue of final certificate of completion by the Client, the MSI shall furnish a written guarantee indemnifying Client against defective materials and workmanship for a period of one (1) year after completion which is referred to as Defect Liability Period. The MSI shall hold himself fully responsible for reinstallation or replace free of cost to Client during the Defect Liability period. MSI should also perform the operational aspects as mentioned in earlier section of this document. MSI shall provide approved temporary replacement equipment and material such that the system remains fully functional as designed and commissioned during repair or replacement activities at no cost to the Client. The MSI shall support NKGCCL in day to day operations related to smart city (Software Configuration, Customization, Infra etc.) the scope of the same is briefly described below but not limited to

- Ensuring that all the Smart elements are up and running
- Ensuring that all the Smart solutions are properly integrated and working
- Customizing the Dashboard, reports and views as requested by NKGCCL (Example customizing reports related to eChallan, Traffic Violation and bringing them over the dashboard).
- Adding new SOP's to the ICCC library and customizing the same as per NKGCCL's request.

Comprehensive Maintenance for System and Services

MSI shall be responsible for comprehensive maintenance of both hardware and software, up-gradations in the system, expansion of the system, technical manpower, spares management and replenishment, performance monitoring and enhancements, preventive and corrective maintenance of the smart city ICT components deployed as part of this project and shall maintain service levels as defined in the RFQ cum RFP. All equipment and material supplied by the MSI shall be provided with standard warranty against defects of design and manufacturing and against faults and failures associated with workmanship of MSI and its sub- contractors commencing from operation acceptance of the system. All equipment found to be defective during comprehensive maintenance shall be repaired or replaced by the MSI at no cost to the Client.

MSI shall provide all the technical, managerial, and other staffing required to manage day-to- day maintenance of the smart city ICT components during the Contract period, including different categories of resources (L1, L2 or L3) for managing the ICCC and DC as per SLAs.

All spares required for the smooth operation of the smart city ICT components shall be maintained by the MSI for the entire duration of the contract to meet SLA requirements. The cost of the spares, repairs, and replacement shall all be deemed to be included in the price quoted by the MSI. MSI shall also institutionalize structures, processes and reports for management of SLA. Root cause analysis and long term problem solutions shall also be part of MSI scope.

MSI shall maintain all data regarding entitlement for any update, enhancement, refreshes, replacement, bug fixing and maintenance for all project components during Warranty. MSI shall be responsible for updates and implementation of new versions for software and operating systems when released by the respective OEM at no extra cost to the Client during entire duration of contract. Requisite adjustments / changes in the configuration for implementing different versions of system solution and/or its components shall also be done by MSI. The MSI shall also ensure application of patches to the licensed software covering the appropriate system component software, operating system, databases and other applications. Software License management and control services shall also be conducted by the MSI during this phase. Any changes to the software during comprehensive maintenance shall be subjected to comprehensive and integrated testing by MSI to ensure that changes implemented in system meets the specified requirements and doesn't impact any other function of the system. Issue log for errors and bugs identified in the solution and any change done in solution shall be periodically submitted to the Client.

MSI shall ensure OEM support during Comprehensive Maintenance stage for system performance, performance tuning, updates etc. MSI shall provide all support for formulation of all policies and procedures related to System Administration, Data Base Management, applications, archives, network management & security, back up and data recovery and archive, data synchronization after crash.
MSI shall prepare a detailed System administration manual, Data administration manual, operational manual, User manual which shall be used by Client's employees to operate smart city ICT components. This shall also include how the various parameters shall be monitored/ tuned in a live system. Preparation of requisite system configuration for disaster recovery management and fail over system plan shall also be under the supervision of MSI. The MSI shall also maintain the following minimum documents with respect to ICT components: High level design of system

- Module level design of system
- System Requirement Specifications (SRS)
- Any other explanatory notes about system
- Traceability matrix
- Compilation environment

MSI shall also ensure updation of following documentation of software system:

- Documentation of source code
- Documentation of functional specifications
- Application documentation is update to reflect on-going maintenance an enhancement including FRS and SRS, in accordance with the defined standards
- User manuals and training manuals are updated to reflect on-going changes/enhancements
- Adoption of standard practices in regards to version control and management

The communication costs (Internet charges, telephone charges, 3G/GPRS connectivity charges) and any other incidental charges related to maintenance period shall be in the scope of the MSI and considered to be included in the proposal submitted by the MSI for the entire contract duration.
Any planned and emergency changes to any component during maintenance period shall be through a change management process. For any change, MSI shall ensure:

- Detailed impact analysis
- Change plan with roll back plan
- Appropriate communication on change required has taken place
- Approvals on change
- Schedules have been adjusted to minimum impact on production environment
- All associated documentation are updated post stabilization of the change Version control maintained for software

Any software changes required due to problems/bugs in the developed software/application will not be considered under change control. The MSI will have to modify the software/application free of cost. This

may lead to enhancements/customizations and the same needs to be implemented by the MSI at no extra cost.

If the Operating System or additional copies of Operating System are required to be installed/ reinstalled / deinstalled, the same should be done as part of the post implementation support.

MSI shall also provide operations support for (Not limited to):

- Data Backup/Archival over tape drive/ other means agreed as per solution design - For - - RLVD/Traffic videos/evidence as per NKGCCL requirement.
  - eChallan data archival as per NKGCCL specified frequency.
  - Data archival policy specified as per eGov standards
  - Video stream to be archived post 30 days
- Retrieval of the Backup/Archival data from tape drive/ other means agreed as per solution design

MSI shall support NKGCCL in generating reports that offers a library of ''statement'', ''report'' and ''predefined dashboards'' which can be easily modified as per NKGCCL needs. The MSI will be required to make these modifications as a part of scope for the project.

It is also expected that the reporting module developed by MSI will allow end users to easily design new reporting templates (creation of new fields, calculations, sorting, totals, sub totals, combination of existing reports etc.). Moreover, the users should be able to export/import data for/from external applications not limited to for example excel/ MS-access, for specific reports.

MSI should support NKGCCL in generating the reports for view over dashboard/Print

- Day to day operational reports related to Smart city solutions.
- Monthly reports related to Smart city solutions. Standard Operating Procedures and its status.
- Logging and Auditing related to smart city solutions.

The MSI will also be required to ensure that it is possible to create or insert graphics into the generated documents or reports or dashboards. Nevertheless, ''developing customer documents'' must be within the reach of the users.
Print outs will be available on paper (A4 and A3) and in an electronic file format, as text files in column, Microsoft Word, Microsoft Excel or Adobe PDF document. In addition to the Microsoft suite of products, compatibility should also be ensured with the corresponding open source equivalent suite of office products.

MSI should ensure automation for generating recurring reports.

Key Modules and Overall Requirements

Key Modules

Key modules to be implemented as part of the smart city solution is depicted below:

Integrated Command and Control Center (ICCC)

The Integrated Command and Control Center will receive input from different sources and field devices installed as part of, traffic management, safety and surveillance, environment etc. Feeds from these sources will be assimilated, analysed and visualized over single platform resulting in an aggregated city level information providing integrated single view to city operators. Further, this aggregated city level information could be converted to actionable intelligence, which would be transmitted to relevant stakeholders and citizens for appropriate responses and information.

Data Center

The Data Centre will be housed by using the existing State Data Centre at Monibhandar.

Grievance Redressal System & Module

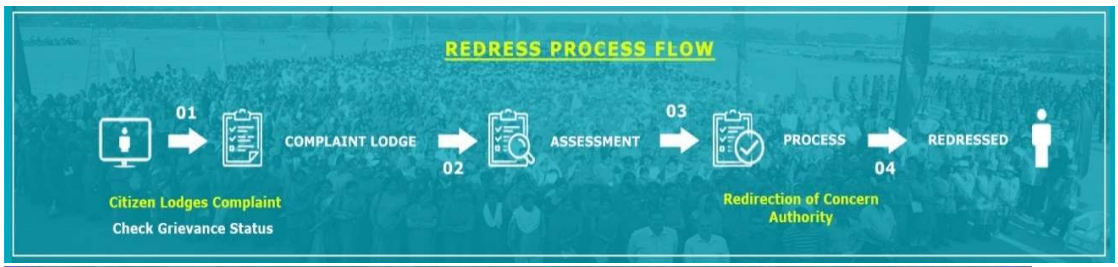
The MSI shall in consultation with NKGCCL will create a Grievance Redressal System & Module which will enable Smart and Efficient tracking of the Grievances being collected from various different heterogenous sources, like Calls, Emails and letters. These will be tracked along with the Call Centre Support Team in order to understand the Trend of the Grievances and the rate of addressing and closure of the same.

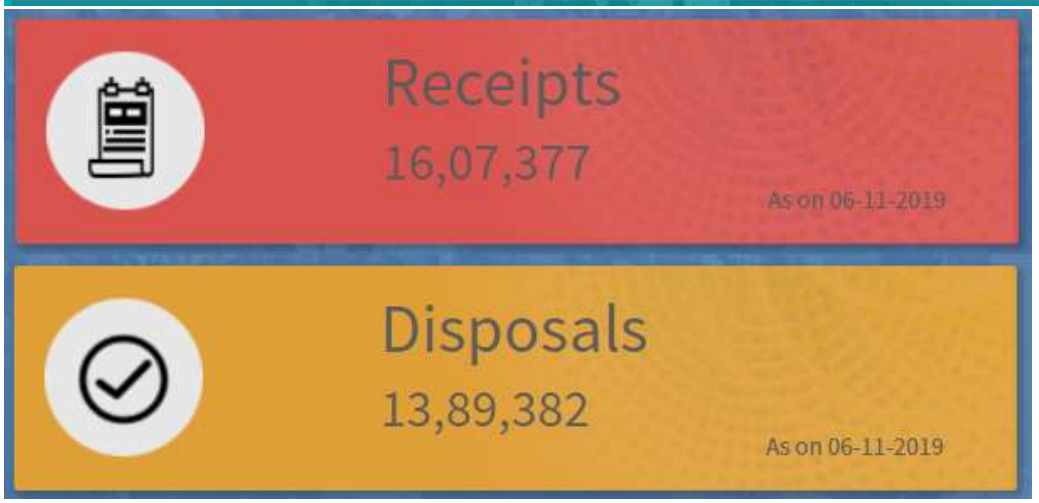
GRIEVANCE SUBMISSION -> TRACKING ASSESMENT -> REDRESSAL

Overall Tracking & Handling of grievances with Mile-Stone Based Reports

Time Series, Location based, Type Based Analytical outcomes

Cross-reference outcomes for auto Analytical Assessment of Grievance vs Service Provider





Network connectivity on Lease

The MSI shall in consultation with NKGCCL select a telecom operator who can provide the requisite city network backbone and managed infrastructure that will enable connectivity across all field devices, sensors, ICCC and DC & DR on lease basis.

Safety and Surveillance

The core objective is to create a supporting mechanism for the city civic agencies through 24x7 surveillance and monitoring throughout the city as well as enable proactive identification of security issues leveraging intelligent analytics from the surveillance system. This module proposes implementation of a holistic safety & surveillance system across the city including:

- **Integration of the Feed of the existing 2500+ CCTV Cameras**

- Centralized AI based intelligent Video analytics at data centre for all the cameras installed – Integration of the Existing Such Analytics with Some Additional
- Develop a full-fledged command and control for ensuring 24X7 monitoring and enabling effective action to be taken in case of law and order/ disaster situations
- Integration with existing safety & surveillance systems already implemented

Intelligent Traffic Management System (Integration for AI based intelligent analytics)

Integration of the Existing Intelligent Traffic Management System (ITMS) aims at improving the efficiency and effectiveness of the traffic management system through centralized monitoring and management at the ICCC. ITMS related solutions will focus on implementation of a Adaptive Traffic Control System, Traffic Violations and Detection System (based on ANPR) with E-Challan capturing Red light violations, Zebra crossing violations, Speed violations, Free left violations,wrong direction movement,No Helmet, On-street parking, Use of cell phones while driving, No Seat-belt, and Triple Riding.

Other Smart Solutions

1. Public Address System

Public Address (PA) system shall be used at intersections, public places, market places and other strategic locations as identified by NKGCCL to make important announcements for the public. It shall be able to broadcast messages across all PA systems or specific announcement could be made to a particular location supporting single zone / multi zone operations. The system shall also deliver pre-recorded messages to the loud speakers attached to them from CD/DVD Players & Pen drives for public announcements. This system shall be used to announce informatory and emergency messages to the road users and will be connected to the ICCC system application. The PAS System shall be capable of playing pre-defined audible messages from the ICCC. The system shall contain an IP based amplifier and uses PoE (Power over Ethernet) power that could drive the speakers. The system shall also contain the control software that could be used to control/monitor all the components of the system that includes Controller, Calling Station & keypad, Amplifier (Mixing & Booster).

2. Variable Messaging Signboards

Variable messaging displays will be setup across the city and will be used to display information related to traffic congestion, accident, disruptive incidents, ongoing roadwork zones, speed limits & traffic diversions, key notices or messages from RMC like information about any emergency or disaster, etc.

4. Wi-Fi Hotspots

Wi-Fi hotspots are proposed to be installed to enable citizens to collaborate and perform business activities with a high speed and seamless network connectivity. This connectivity will be highly secure via user authentication mechanism and chargeable beyond free data limits. There will be Wi-Fi controller which will monitor, manage, and control access points from the ICCC. Wi-Fi access points shall provide low cost, secure connectivity for IoT applications, smart buildings and city administration.

5. Website/Portal & Existing Mobile app

The website/portal and mobile application together shall enable the citizens to transact in e-governance services along with providing other informative and interactive services.

6. Administrative Facing Mobile app

The mobile app will be built with the intention to enable the various administrative stakeholder to take benefits of the reports and data churning outputs of the ICCC into an easy to access platform from any location. This will enable different layers of administrators to access needful data reports on real-time basis to take quick and needful action.

7. Artificial Intelligence based analytics with continuous Machine Learning for Trend Analysis

All video feed coming from the cameras should be enabled to run analytics on all the use cases leveraging artificial intelligence and must show continuous improvement in accuracy quarterly during operations. All use cases should be demonstrable at individual sensors/devices at ICCC.

Integration Requirements

Integration services shall include:

- Set-up data movement for various systems under integration framework;
- Create enterprise integration framework for various integration touchpoints. Approach for integration shall be SOA based and must be facilitated by industry best practices; Validation of data movement between source and target system.

MSI is required to propose a composite solution for integration which is SOA (Service Oriented Architecture) and Business Process Management (BPM) enabled. The solution will be configured to meet the requirements of workflow processes across systems. The integration between systems will be based on Open API standards.
The proposed solution should

- Offer highly secured means of integration with existing applications
- Support encrypted and secured means data exchange
- Maintain complete audit trail and logging of data exchanged

The integration scope is divided into 3 types

- Existing applications
- New applications that are part of this RFP Future Integration

The table below provide indicative list of systems that has to be integrated with ICCC and brief scope of work:

No.	Service	Brief Scope of Integration (New)
1.	Municipal Services (e-Gov Integration)	Building Plan Sanction by NKDA Enrolment of Technical Persons at NKDA Generation and Payment of Water Charge at NKDA Issuance of Occupancy Certificate by NKDA Issuance of Partial Occupancy Certificate by NKDA Issuance of Record of Title (Mutation) by NKDA Issuance of Temporary Water connection by NKDA Issuance of Trade License by NKDA Registration of Birth at NKDA Registration of Death at NKDA Renewal of Building Plan by NKDA Renewal of Enrolment for Technical Persons at NKDA Renewal of Partial Occupancy Certificate by NKDA Renewal of Trade License by NKDA Assessment of Property Tax Payment of Property Tax
2.	Project Status Monitoring	Project status will be monitored to check for at a glance progress reports and other needful insight & analytics.

3.	Public Facility Management & Monitoring	This module will be built in order to maintain the different public facilities under the New Town authorities like Eco Park, where their functioning health and parameters can be monitored for necessary quick action.
4.	App Based Cycle – Status Monitoring	This module will be responsible for integrating with the existing App Based Cycle system in New Town in order to check its Health and functional aspects at a glance.
5.	Health Centre Integration	The Health Centre Integration in this scope will include the availability of data from the Health Centres for critical administrative decisions. For Example – Dengue data, etc.
6.	Solid Waste Management Operation	This module will integrate with the existing Solid Waste Management & Tracking System in order of a understanding on the working condition of the same.
7.	LoRAWAN Based Streetlight (Integration)	This module will be responsible for integrating with the existing LoRAWAN Street Light project via API in order to have the health and performance parameters available for analytical reporting and cross-border analysis.
8.	Solar Power Plant - Status	This module will monitor the different aspects of a Solar Power Plant, like Health, Performance, Power Produced, Efficiency and Efficacy. This will also give a general idea about the overall effectiveness and efficiency of the plant.
9.	Flooding & Water Level Monitoring	This module will be built from ground up with IoT Sensor Layer Integration to Monitor the Water Logging at Key areas and Flooding via the use of Sensors and other technologies in order to prove a quick view to the ICC Help Desk
10.	Water Level Monitoring	This module will be built with the help of the IoT Integration layer and sensor-based technologies in order to keep a check on the safety level of the water bodies within New Town, such as Bagjola Khal, etc.
11.	Traffic Management	ICCC shall integrate with Intelligent Traffic Management System comprising Adaptive Traffic Signal Control System (ATCS), Traffic Enforcement System including traffic violation detection, E-challan, No Helmet, Triple riding etc. using Automatic number plate recognition
12.	City Surveillance	Surveillance system shall be integrated with ICCC to ensure safety and security of the citizens across strategic locations in the city. The safety and surveillance solution shall also be able to share the feeds, data to existing Police Command and Control Center

No.	Service	Brief Scope of Integration
13.	Smart Wi-Fi	• ICCC will be required to integrate with Wi-Fi Hotspots sub System using Open API standards to receive the feeds related to - Wi-Fi status across city - KPI's related to free Wi-Fi • ICCC should be able to map this information on the GIS layer and help authority monitor the Wi-Fi Hotspots across the city. • ICCC should also be able to trigger the commands / alerts (if required) to the respective sub system. • All the information received from Wi-Fi Hotspots sub system will get into Analytics layer of ICCC and provide useful insights and KPI's over dashboard.
14.	VaMS / PAS	ICCC shall be integrated with Traffic Information Dissemination System comprising Variable Message Signboards (VaMS) and Public Address System (PAS)
15.	Website/Portal and Existing Mobile App	Integration with existing e-governance application to enable transactional services by the residents
16.	Public Restroom Monitoring (Integration)	This module will be responsible for integrating with the existing Public Restroom Monitoring Application in order to understand the Health of the Restrooms along with the cross analysis of the cleaning schedules, etc.
6.	Online GIS Platform	Completely integrated for all City Applications and Services. The GIS Platform shall act as the single unified data map for New Town. The Data collected/generated for the maps shall be available to all application/agencies from time to time.
Future Integration		
7.	All future scoped projects such as Passenger Information System, others up to a capability to integrate 36 additional such micro-services of new projects into the existing ICCC Platform.	

Responsibility of MSI

The functional requirements and technical specifications provided in this RFP are indicative and carry guiding rule. The MSI is free to offer fully compliant products and solutions, which meet requirements of the RFP focusing on the outcome, future scalability, security, reliability and adherence to specified SLA under this RFP, in line with applicable standards & best practices adopted in the industry. The MSI is encouraged to design an Optimized solution, which is technically superior, innovative, proven, better in terms of functionality and is cost effective. Any specified parameters mentioned in the scope/technical requirement in the RFP may be considered if it is required for meeting current & future requirements during the contract period. The MSI is fully responsible for the specified outcome to be achieved.

Standards and Protocols

The MSI solution shall comply with the following standards as well as others as may be applicable:

S.No.	Standard/Protocol	Remarks

1.	Biometrics Standard	http://egovstandards.gov.in/notified-standards-0
2.	Digital Preservation Standards	http://www.egovstandards.gov.in/guidelines-0
3.	Localisation and Language Technology Standards	Unicode Standards 5.1.0 and future upgrades, ISO/IEC 14496-OFF
4.	Copy Right	Proper copyright policy
5.	Use of National Emblem	Directives as per the 'State Emblem of India (Prohibition of improper use) Act, 2005'.
6.	Domain name convention	Government's Domain Name Policy
7.	Link with National Portal	As per guidelines provided in at http://india.gov.in/linktous.php
8.	Content Hyper linking	Hyperlinking Policy
9.	Metadata and Data Standards	http://egovstandards.gov.in/notified-standards-0
10.	Mobile Governance	http://www.egovstandards.gov.in/guidelines-0
11.	Guidelines for Indian Government Websites	http://www.egovstandards.gov.in/guidelines-0
12.	Open APIs/Open Standards like One M2M	http://egovstandards.gov.in/frameworkinstitutionalmechanism-and-policies
13.	Internet of Things	• Sensors & Actuators (IEEE 1451) • Identification technology (ISO/IEC JTC 1/SC 31) • Domain Specific Compliance-respective domain specific standards like HL 7 for healthcare devices etc.
14.	Communication Technology	Thread, AllJoyn, IEEE 802.15.4, IETF 6 LoWPAN, IETFROLL, IETF CoAP
15.	Use Case/Application Specific	Domain specific standards like IEEE 11073 for e-health etc.
16.	Consortia	Open Interconnect consortium, Industrial Internet Consortium
17.	Architecture Technology	IEEE P2413
18.	Disaster Management	Please refer Annexure B
19.	Cyber Security	Cyber Security Model Framework for Smart Cities vide Ministry of Housing and Urban Affairs (erstwhile Ministry of Urban Development), Government of India OM No. K-15016/61/2016 SC-1 dated 20th May 2016
20.	Information Security	ISO 27001
21.	IT Infrastructure Management	ITIL specifications

22.	Service Management	ISO 2000 specifications
23.	Project Documentation	IEEE/ISO/CMMi
24.	Differently abled people	Should be compliant with The Rights of Persons with Disabilities Act, 2016 and related guidelines.

Integrated Command and Control Centre

Objective

To enhance the safety and security, improve efficiency of city administration and ensure better quality of life for residents, New Town intends to develop a robust ICT infrastructure that supports digital applications and ensures seamless steady state operations, traffic management, emergency response mechanisms and real time tracking of services and vital city metrics throughout the city.

The ICT infrastructure setup shall be monitored through the Integrated Command and Control Centre (ICCC) which will serve as the 'nerve centre' of New Town and assist in enhancing efficiencies of city operations and management. It shall provide a holistic view of all city operations allowing monitoring, control and automation of various functionalities at an individual system level along with enabling cross-system analytics. The ICCC shall be deployed in New Town as part of this project, to make the city operations intelligent, integrated and efficient.

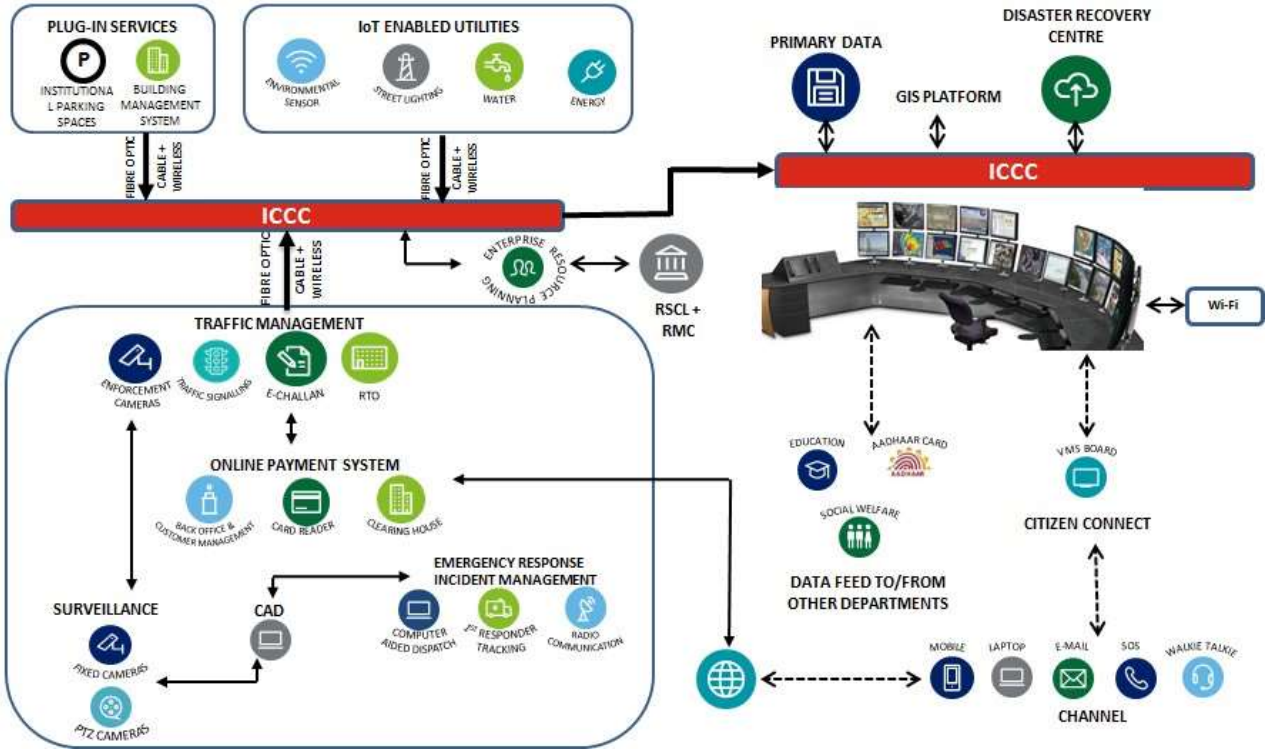
ICCC is envisioned to provide an integrated platform enabling (a) sharing of real-time information amongst various departments and (b) evidence based decision making thereby improving the efficiency of the city administration and improving quality of life of the citizens.

ICCC enables collation of information and collaborative monitoring, thus helping in the analysis of data for quicker decision making. Intelligent operations capability ensures integrated data visualisation, real-time collaboration and deep analytics that can help different stakeholders prepare for exigencies, coordinate and manage response efforts, and enhance the ongoing efficiency of city operations. Key benefits accruing from the ICCC are as follows:

- Shall enable cross-system and cross-agency coordination to monitor, operate and manage the city in an integrated manner.
- ICCC platform shall enable different agencies and departments of New Town to monitor and utilize information of other departments for delivering services in an integrated and more efficient manner.
- ICCC shall be able to normalize the data coming from different devices of various Original Equipment Manufacturers (OEMs) leveraging the IoT platform. It shall support integration with multiple vendors.
- ICCC platform shall enable various visualization and analytics of city operations to improve decision making. These analytics shall be achieved via cross-system integration of various systems and as per the standard operating procedure. Analytics shall include both prescriptive and predictive analytics.
- ICCC shall provide reporting capabilities for city administrators to keep record of city operations.
- The systems at ICCC shall ensure that integrity and confidentiality of all information gained is secure at all times.
- The ICCC platform shall be the integration point at which data from across the city converges for processing. This shall allow all information to be managed within the same network, eliminating many communication problems that are faced by working in silos.
- The ICCC shall be rated for 24x7 operations and shall provide shift based operations for an overall 24x7 support.
- ICCC platform may not necessarily duplicate all functionality derived out of individual system specific applications but will monitor and integrate various features using which an intelligent city operation can be achieved.

Indicative Solution Architecture

The indicative architecture for the proposed Integrated Command and Control Center has been depicted below:



Indicative ICCC Room Architecture

LAYOUT HIGHLIGHTS

- Maximum Free-Space Oriented Layout
- Maintaining 16:9 Aspect Ratio of the Screens
- 24*7 Support Control Centre Integrated
- 3-4 Round the Clock Staff
- Server Infrastructure to be Augmented from SDC, Manibhandar
- Foldable Furniture for Ease of Stacking and Efficient Space Utilization
- Separate Side Room for Disaster Management Facility
- Holding Stackable Disaster Time Equipment like Power Torches, Axe, Etc
- Disaster time Satellite Router (from Mini Canada Conference)

WEBEL TECHNOLOGY LIMITED

SECTION – B

ELIGIBILITY CRITERIA

S. No	Qualification Criteria	Details	Mandatory documentary evidence to be Submitted
1	**Company Registration**	The bidder must be a company registered under Companies Act, 1956/2013 or Partnership or LLP or OPC or Proprietary Firm. Documentary (Certificate of incorporation/Relevant document) evidence to be submitted	Bidder Registration under Companies Act, 1956/2013. 5 years of operations or Certified true copy of relevant extracts of balance sheet and PL statements for last 3 years
2	**Average Annual Turnover**	The Bidder shall have an average annual turnover of 150 Crore over the last three (3) financial years (FY 2017-18,2018-19,2019-20) from IT/ITES. The above criteria should be met by BIDDER by its own or by parent BIDDER in case of 100% subsidiary.	Bidder should submit: 1. Audited financial statements for the last three financial years 2. Certificate from the Statutory Auditor/ CA on turnover details from the "specific business areas" over the last three (3) financial years
3	**Net worth**	The Bidder should have positive net worth as per the audited consolidated financial statements for last 3(Three) financial years (FY 2017-18,2018-19,2019-20).	Audited and Certified Balance Sheet and Profit/Loss Account of last 3 Financial Years should be enclosed clearly specifying the net worth of the firm. a) Certificate from the Statutory auditor/ CA
4	**Relevant Experience**	The bidder should have working experience of the following area for Govt./PSU: i. Optical Fiber Cable (OFC) laying of more than 20 Kms for own or project purpose. ii. Transmission Equipment (Router/Switch) installation for more than 50 different locations with Network operation center & NMS implementation iii. Data Centre Operations experience for DC/DR. Cumulative value of the project should not less than 50 Cr. **OR** The bidder should have experience of setting up and Operation & Maintenance of Integrated command & control Centre in any of the Smart City of India during last (5) years as on Bid Submission date. Project value should be not less than 50 Cr **OR** The Bidder should be in business of providing IT/ITES related solutions and services from past 5(Five) years at least prior to last date of bid submission & single project worth INR 50 Cr	Documentary evidence (Copy of completion/ Ongoing client certificate and Work Order/ Contract).

6	**Blacklisted / Debarment**	The Bidder should not be blacklisted by Union Territory/ Central / State Government Department or Central/State Public Sector Units (PSUs) or Smart City in India as on the bid submission date.	Affidavit duly notarized to be submitted by the bidder. Note: Bidders are also requested to provide information regarding any arbitration resulting from contracts executed by the bidder in past.
7	**Power of Attorney**	The authorized signatory for signing the contract/agreement with WTL should be duly authorized by competent authority to sign the contract/agreement on their behalf.	POA document
8	**Presence**	The bidder should have office in the state of West Bengal or should furnish an undertaking that the same would be established within one month of signing of the contract if project is awarded.	Address Proof of the office/Undertaking
9	**Business Reliability**	The bidding organization must be in similar Service of business for a minimum period of last 10 (Ten) financial years. Conclusive Documentary evidence in form of past work orders with completion certificate with proper linking with work order in the name of the organization must be furnished as supporting.	Bidders to provide certificate regarding compliance. (Certificate of Incorporation)
10	**Minimum Technical Relevance_1**	The bidder should have completed/ongoing at least 3 projects of Data Centre / ICCC each of value more than Rs. 5 Crores in the last 5 financial years (i.e.,). The Projects must have been in India for any State/Central Government department/PSUs/Corporations. OR The Bidder should be in business of providing IT/ITES related solutions and at least 3 projects of IT/ITES each of value more than Rs. 5 Crores in last 5 financial years (i.e.,). The Projects must have been in India for any State/Central Government department/PSUs/Corporations.	Bidders to provide certificate regarding compliance.
11	**Minimum Technical Relevance_2**	The bidder must have successfully completed/ongoing at least 3 application integration projects (W.O copy mentioning the links to be submitted) during the in the last 5 financial years (i.e.,) for any State/Central Government department/PSUs/Corporations	Bidders to provide certificate regarding compliance.
12	**Tender Fee**	Bidder should transfer Tender Fee of Rs. 10000.00 (Rupees Ten thousand only) electronically to Webel Technology Limited as per the details given in Clause – 9, Section - D.	Bank transfer intimation to be submitted
13	**Earnest Money Deposit**	Bidder should submit Earnest Money Deposit (EMD) of Rs. 8000000.00 (Rupees Eighty lakhs only) through Bank Guarantee to Webel Technology Limited as per the details given in Clause – 9, Section - D.	Hard Copy of Original Bank Guarantee to be submitted before Bid Opening
14	**Bid Form**	The bidder shall submit Bid Form (Section – E) duly signed by the authorized signatory of the company as per the format enclosed. Deviation in format may not be accepted.	Submitted as per format Section - E

WEBEL TECHNOLOGY LIMITED

SECTION – C

DATE AND TIME SCHEDULE

Sl. No.	Particulars	Date & Time
1	Date of uploading of N.I.T. & other Documents (online) (Publishing Date)	18.12.2020
2	Documents download/sale start date (Online)	18.12.2020
3	Last Date and time of sending the queries (Offline)	24.12.2020 at 15.00 Hrs.
4	Pre Bid Meeting at WTL Office (Off Line)	28.12.2020 at 12.00 Hrs.
5	Corrigendum, if any will be published (On Line)	-
6	Bid Submission start date & time (On line)	01.01.2021 at 14.00 Hrs.
7	Last Date & time of submission of Earnest Money Deposit & submission of remittance details	08.01.2021 at 15.00 Hrs.
8	Last Date & time of submission of Tender Fee & submission of remittance details	08.01.2021 at 15.00 Hrs.
9	Bid Submission closing date & time (On line)	08.01.2021 at 12.00 Hrs.
10	Bid Opening date & time for Technical Proposals (Online)	11.01.2021 at 12.00 Hrs.
11	Date of uploading the final list of Technically Qualified Bidder (online) after disposal of appeals, if any	-
12	Date for opening of Financial Bid (Online)	-

Note: Site Inspection Date – 30.12.20.

WEBEL TECHNOLOGY LIMITED

SECTION – D

INSTRUCTION TO BIDDER

1. DEFINITIONS

In this document, the following terms shall have following respective meanings:

"**Agreement**" means the Agreement to be signed between the successful bidder and WTL including all attachments, appendices, all documents incorporated by reference thereto together with any subsequent modifications, the RFP, the bid offer, the acceptance and all related correspondences, clarifications, presentations.

"**Acceptance Test Document"** means a document, which defines procedures for testing the functioning of installed system. The document will be finalized with the contractor within 7 days of issuance of the Letter of Award.

"**Bidder**" means any firm offering the solution(s), service(s) and /or materials required in the RFP. The word Bidder when used in the pre award period shall be synonymous with Bidder, and when used after award of the Contract shall mean the successful Bidder.

"**Contract**" is used synonymously with Agreement.

"**Contract Price"** means the price to be paid to the Contractor for providing the Solution, in accordance with the payment terms.

"**Contractor**" means the Bidder whose bid to perform the Contract has been accepted by Tender Committee and is named as such in the Letter of Award.

"**Default Notice**" mean the written notice of Default of the Agreement issued by one Party to the other.

"Installation" means installation of supplied Hardware & Software.

"**Fraudulent Practice**" means a misrepresentation of facts in order to influence a procurement process or the execution of a Contract and includes collusive practice among Bidders (prior to or after Bid submission) designed to establish Bid prices at artificial noncompetitive levels and to deprive WTL and eventually Departments of Gov. of W. Bengal of the benefits of free and open competition.

"**GoI**" shall stand for the Government of India.

"**GoWB**" means Government of West Bengal.

"**NKSGCCL**" means New Town Kolkata Green Smart City Corporation Limited.

"Personnel" means persons hired by the Bidder as employees and assigned to the performance of the Infrastructure Solution or any part thereof.

"**Similar Nature of Work"** means Supply, Installation, Commissioning & Maintenance of ICCC / DC or similar setup as will be specified in the eligibility criteria segment

"Project" Supply, Installation, Commissioning and Maintenance of integrated City Command and Control system for NKGSCCL.

"Services" means the work to be performed by the Bidder pursuant to this Contract, as described in the detailed Scope of Work.

"**Interest rate**" means "364 days Government of India (GoI) Treasury Bills" rate.

"**Law**" shall mean any Act, notification, bye law, rules and regulations, directive, ordinance, order or instruction having the force of law enacted or issued by the Central Government and/or the Government of West Bengal or any other Government or regulatory authority or political subdivision of government agency.

"LOI" means issuing of Letter of Intent shall constitute the intention of the WTL to place the Purchase Order with the successful bidder.

"**Requirements**" shall mean and include schedules, details, description, statement of technical data, performance
characteristics, standards (Indian as well as International) as applicable and specified in the Contract.

"Service" means provision of Contracted service viz., operation, maintenance and associated services for DEPLOYED SYSTEMS as per Section titled "Scope of Work".

"Termination Notice" means the written notice of termination of the Agreement issued by WTL.

"Uptime" means the time period when specified services are available with specified technical and service standards as mentioned in section titled WARRANTY SUPPORT" **"%Uptime"** means ratio of 'up time' (in minutes) as mentioned in section titled "Warranty support".

"**Service Down Time**" (SDT) means the time period when specified services with specified technical and operational requirements as mentioned in section titled "WARRANTY SUPPORT"" are not available to Gov. of W. Bengal and its user departments and organizations.

"WTL" means Webel Technology Limited a Govt. of W. Bengal undertaking.

2. PRE BID MEETING

Pre Bid Meeting will be held on 28.12.2020 at 12.00 hrs. (**On-Line Meeting**). Bidder can send their queries as per format (Section - N) to Manager (Purchase) (purchase@wtl.co.in) Only the queries received within the stipulated date (24.12.2020 at 15.00 Hrs.) prior to the Pre Bid Meeting will be answered. Interest bidders are requested to send mail to (purchase@wtl.co.in) for participation of online pre-bid meeting. Based on request WTL will share meeting id / links for meeting. If there is any change in date and time then will inform.

3. COST OF BIDDING

The bidder shall bear all costs associated with the preparation and submission of the bid and WTL will no case be responsible for those costs regardless of the conduct or outcome of the bidding process.

4. BID DOCUMENT

Bidder is expected to examine all instructions, forms, terms and requirement in the bid document. The invitation to bid together with all its attachment thereto shall be considered to be read, understood and accepted by the bidder unless deviations are specifically stated in the seriatim by the bidder. Failure to furnish all information required by the bid document or a bid not substantially responsive to the bid document in every respect may result of the bid.

5. AMENDMENT OF BID DOCUMENT

At any time prior to the deadline for submission of proposals, WTL reserves the right to add/modify/delete any portion of this document by issuance of a Corrigendum, which would be published on the website and will also be made available to the all the Bidder who have been issued the tender document. The Corrigendum shall be binding on all bidders and will form part of the bid documents.

6. MODIFICATION AND WITHDRAWAL OF BIDS

The bidder cannot modify or withdraw its bid after submission.

7. LANGUAGE OF BID & CORRESPONDENCE

The proposal will be prepared by the Bidder in English language only. All the documents relating to the proposal (including brochures) supplied by the firm should also be in English, and the correspondence between the Bidder & WTL will be in English language only. The correspondence by fax/E-mail must be subsequently confirmed by a duly signed formal copy.

8. BIDDER'S SOLUTION

The bidders are requested to study the Bill of Material supplied with this document carefully. While working out the solution the bidder has to work with the broad minimum specification provided in the tender documents, conforming to the model, make and Part number (wherever provided). While submitting the bid the bidder has to detail out all components needed to complete the system BOM. The bidder is required quote for each item retaining all major components/sub system detailed and specified. As the contractor will be responsible for smooth functioning of the system, availability of spares during the tenure of the warranty period have to be take care by the contractor to maintain the guaranteed uptime.

9. EARNEST MONEY DEPOSIT (EMD)/TENDER FEE

The bidder shall furnish Tender Fee of Rs. 10000.00 (Rupees Ten thousand only) by transferring the amount electronically to the under noted Bank Account and EMD of Rs. 8000000.00 (Rupees Eighty lakhs only) to be submitted in the form of Bank Guarantee. Format of Bank Guarantee is given in Section – R.

ACCOUNT NAME	:	WEBEL TECHNOLOGY LIMITED
BANK NAME	:	SYNDICATE BANK
CURRENT A/C NO.	:	95981010003870
IFS CODE	:	SYNB0009760
MICR	:	700025048

The bidder has to intimate the details of Remittance such as Tender No. / Tender Date / Tender Fee Amount / EMD Amount / UTR No. of Transaction(s) / Transaction Date, etc. through email to Mr. Rupak Roy – (rupak.roy@wtl.co.in) and copy to purchase@wtl.co.in prior to the opening of the bid.

The bidder shall also furnish the details of Tender Fee & EMD (Bank Guarantee) submission in the bid document. In absence of payment details prior to Bid Opening, then the bid will be considered as invalid bid. Any bid not accompanied with the EMD & Tender Fee shall be rejected.

The bidders are also requested to furnish the Bank Account details (Name of the Bank, Account Number, IFS Code, etc.) for refund of EMD in case of unsuccessful bidder.

10. FORFEITURE OF EMD

EMD made by Bidder may be forfeited under the following conditions:

If Bidder withdraws the proposal before the expiry of validity period.

During the evaluation process, if a Bidder indulges in any such activity as would jeopardize the process, the decision of WTL regarding forfeiture of EMD shall be final and shall not be called upon question under any circumstances.

If Bidder violates any of the provisions of the terms and conditions of the proposal.

In the case of a successful Bidder, if Bidder fails to:

a) Accept the work order along with the terms and conditions.
b) Furnish performance security.
c) Violates any of the work conditions of this proposal or indulges in any such activities as would jeopardize the work.
d) Submitting false/misleading information/declaration/documents/proof/etc.

The decision of WTL regarding forfeiture of EMD shall be final and shall not be called upon to question under any circumstances, besides, forfeiture of EMD even the Bidder will be deferred from participating in any job for a period of one year.

11. FORMS AND FORMATS

The various inputs for the Techno Commercial as Financial Bids are to be submitted in the format specified. The bidder shall use the form, wherever specified, to provide relevant information. If form does not provide space for any required information, space at the end of the form or additional sheets shall be used to convey the said information. For all other cases, the bidder shall design a form to hold the required information.

12. LACK OF INFORMATION TO BIDDER

The bidder shall be deemed to have carefully examined the Bid document to his entire satisfaction. Any lack of information shall not relieve the bidder of his responsibility to fulfill his obligation under the bid. If bidder has any queries relating to bid document then he can send the queries before the Pre Bid Meeting.

13. CONTRACT EXECUTION

On receipt of the Letter of Award/Purchase Order the contractor should submit a Performance Bank Guarantee (PBG) equivalent to 10% of the total contract value within three weeks from the date of receipt of Letter of Award/Purchase Order. The PBG should be valid for six month more than the warranty period. All delivery of the material will have to be completed within 45 days from the date of acceptance of contract and the contractor has to ensure all activities leading to the commissioning of the contract to be completed within 75 days from the date of award. Subsequent to the award of contract, the contractor will have to arrange for the requisite material as per BOM.

14. TIME SCHEDULE FOR DELIVERY & INSTALLATION

Activity	**Time in days**
Issue of Purchase Order	T
Furnishing of Bank Guarantee	T+7 days
Delivery of Hardware items	T+42 days
Implementation of Hardware Items including Interior work	T+60 Days
FAT of Hardware Items	T+70 Days
Implementation of Software Items	T+150 Days
FAT of Software Items	T+170 Days

15. LOCATION FOR DELIVERY & INSTALLATION

NEW ADMINISTRATIVE BUILDING OF NEW TOWN KOLKATA DEVELOPMENT AUTHORITY
GROUND FLOOR
NEW TOWN, KOLKATA – 700 156

16. LIQUIDATED DAMAGE / PENALTY

Be-spoke Software & ICCC Platform: LD clause:

i. 0.5% of the total Software bill value of this segment for every 168 hours delay in meeting the delivery schedule

Hardware: LD clause:

a. 0.5% of the total Hardware bill value of this segment for every 168 hours delay in meeting the delivery schedule

b. 1.0% of the total year wise SLA bill value for the Hardware segment for every cumulative machine-hour (machine x hour) fault rectification delay beyond the response time fixed in the SLA

c. The maximum deductible is capped at 10% of the total year wise SLA value.

Vendor Termination Clause: -

i. Termination possibility of MSI in the case of multiple cases of failure to meet SLA terms beyond monthly commitments for 6 continuous months

WTL reserves the right to terminate the contract and WTL will get the job completed by any other competent party. The difference of cost incurred by WTL will be recovered from the contractor and PBG will be invoked.

17. LIABILITY

In case of a default on bidder's part or other liability, WTL shall be entitled to recover damages from the Contractor. In each such instance, regardless of the basis on which WTL is entitled to claim damages from the Contractor (including fundamental breach, negligence, misrepresentation, or other contract or tort claim), Contractor shall be liable for no more than:

- Payment referred to in the Patents and Copyrights clause.
- Liability for bodily injury (including death) or damage to real property and tangible personal property limited to that cause by the Contractor's negligence.
- As to any other actual damage arising in any situation involving non-performance by Contractor pursuant to or in any way related to the subject of this Agreement, the charge paid by WTL for the individual product or Service that is the subject of the Claim. However, the contractor shall not be liable for
- For any indirect, consequential loss or damage, lost profits, third party loss or damage to property or loss of or damage to data.
- For any direct loss or damage that exceeds the total payment for Contract Price made or expected to be made to the Contractor hereunder.

18. PATENTS & COPYRIGHT

If a third party claims that a product delivered by the Contractor to WTL infringes that party's patent or copyright, the Contractor shall defend WTL against that claim at Contractor's expense and pay all costs, damages, and attorney's fees that a court finally awards or that are included in a settlement approved by the Contractor, provided that WTL.

- Promptly notifies Contractor in writing of the claim
- Allows Contractor to control and co-operate with Contractor in the defense and any related settlement negotiations.

Remedies: If such a claim is made or appears likely to be made, WTL would permit Contractor to enable WTL to continue to use the product, or to modify it, or replace it with one that is at least functionally equivalent. If Contractor determines that none of these alternatives is reasonably available, WTL agrees to return the product to Contractor on Contractor's written request. Contractor will then give WTL a credit equal to for a machine. WTL's net book value (provided WTL has followed generally accepted accounting principles for a generally available software product produced by Contractor (Program) the amount paid by WTL or 12 months charges (whichever is lesser) and for materials the amount paid by WTL for the materials. These will be Contractor's entire obligation regarding any claim of infringement.

19. SUSPENSION OF WORK

WTL shall have the power at any time and from time to time by notice to the Contractor to delay or suspend the progress of the work or any part of the work due to any other adequate reasons and on receipt of such notice the contractor shall forthwith suspend further progress of the work until further notice from WTL. The Contractor shall recommence work immediately after receiving a notice to do so from WTL. The whole or any part of the time lost for such delay or suspension shall, if WTL in its absolute discretion thinks fit, but not otherwise, be added to the time allowed for completion.

20. TERMS OF PAYMENT

Payment terms will be on back-to-back basis, i.e., payment will be made only on receipt of payment from relevant customer, Newtown Kolkata Development Authority. A scheduled payment terms depicted below:

i. Project Inception Report: 1% of the project cost

ii. Hardware Delivery & commissioning of ICCC & DC: Balance 60% of CAPEX
(Payment shall be made on a prorate basis based on the modules defined in the SOW of RFP)

iii Go-Live of Hardware Components: Balance 30% of CAPEX (Remaining CAPEX of Hardware) after 01(one) month of Go-Live

iv. Go-Live of integration & Software Components: Balance 80% of CAPEX (of integration)

v. 3(three) months after successful completion of Project Final Go-Live: Balance 10% of CAPEX

vi. Project Operations & Maintenance phase for a period of 36 (Thirty Six) months from the date of Final Go-Live: Balance OPEX of AMC & support will be paid in 12(twelve) equal quarterly instalments spread across 3(three) years Post Final Go-Live.

21. GOVERNING LAWS

This contract should be governed by and interpreted by Arbitration clause in accordance with Laws in force in India. The courts at Kolkata shall have exclusive jurisdiction in all matters arising under the contract. The selected vendor shall keep himself fully informed of all current national, state and municipal law and ordinances. The selected vendor shall at their own expense, obtain all necessary permits and license and pay all fees and taxes required by law. These will be selected vendor's entire obligation regarding any claim of infringement. The selected vendor hereto agrees that it shall comply with all applicable union, state and local laws, ordinances, regulations and codes in performing its obligations hereunder, including the procurement of licenses, permits certificates and payment of taxes where required. The selected vendor shall establish and maintain all proper records (particularly, but without limitation, accounting records) required by any law, code/practice of corporate policy applicable to it from time to time including records and returns as applicable under labor legislation.

22. CORRUPT OR FRAUDULENT

The Tender Committee requires that the bidders under this Tender observe the highest standards of ethics during the procurement and execution of such contracts. For this purpose, the definition of corrupt and fraudulent practices will follow the provisions of the relevant laws in force. The Tender Committee will reject a proposal for award if it detects that the bidder has engaged in corrupt or fraudulent practices in competing for the contract in question. The Tender Committee will declare a firm ineligible, either indefinitely or for a stated period of time, if it at any time determines that the firm has engaged in corrupt and fraudulent practices in competing for, or in executing, a contract.

23. BIDING CLAUSE

All decisions taken by the Tender Committee regarding the processing of this tender and award of contract shall be final and binding on all parties concerned.

The Tender Committee reserves the right:

- To vary, modify, revise, amend or change any of the terms and conditions mentioned above and,
- To reject any or all the Tender/s without assigning any reason whatsoever thereof or to annul the bidding process and reject all bids at any time prior to award of contract, without thereby

incurring any liability to the affected bidder(s) or any obligation to inform the affected bidder(s) of the grounds for such decision.

24. WORKMEN'S COMPENSATION

In every case in which by virtue of the provision of the workmen's compensation Act 1923 or any other relevant acts and rules, compensation to a workman employed by the contractor, is payable, then this should be done by the Contractor. If WTL is obliged to make any compensation under the said rules and acts, then the amount shall be recovered without prejudice, from the bills and due of the Contractor. WTL shall not be bound to contest any claim made against the Contractor in respect of workmen's compensation.

25. CONTRACTOR'S EMPLOYEES

The Contractor shall comply with the provision of all labour legislation including the requirement of the payment of Wage Act 1936 and the rules framed there under and modifications thereof in respect of men employed by him in carrying out the contract. The Contractor must ensure that he complies with PF, ESI regulation for all his deployed employees. The Contractor shall see that all authorized Sub Contractors under him similarly complied with the above requirement.

26. SAFETY MEASURES

The Contractor shall in the course of execution of the work take all necessary precaution for the protection of all persons and property. The Contractor shall take adequate measures to protect the work and present accident during the work. In the event of any accident to any person or persons or damage or injury of any description to any person or property due to failure on the part of the contractor in taking proper precautionary measures the contractor shall be responsible for and must make good the loss the damage at his own cost to the satisfaction of the department and employees of the department shall be indemnified from all claims or liabilities arising there from or any expenses incurred on account thereof.

27. EQUIPMENT

All tools & tackles necessary for the work shall have to be procured by the contractor unless otherwise specified elsewhere in these tender documents. The equipment used by the contractor for a particular work must be appropriate for the type of work. The contractor shall maintain the equipment used on the work properly so that they are in good working condition. In no case shall the contractor use defective or imperfect equipment in the work. The contractor shall arrange to replace or repair all defective equipment so that the progress of the work is not hampered. No defective equipment should be left at the site of work and the department shall not be responsible for any loss or damage to any of these equipments during the course of the execution of the work.

28. SUB-CONTRACT/CONSORTIUM

The purchaser (WTL) does not recognize the existence of Sub-Contractors. The Contractor's responsibility is not transferable. No consortium partner is allowed.

29. TERMINATION FOR DEFAULT

WTL may without prejudice to any other remedy or right of claim for breach of contract by giving not less than 30 days written notice of default sent to the contractor, terminate the order in whole or in part. If the contractor materially fails to render any or all the services within the time period specified in the contract or any extension thereof granted by WTL in writing and fails to remedy its failure within a period of thirty days after receipt of default notice from WTL. If the project (delivery, commissioning as well as warranty maintenance support is not carried out according to specification due to deficiency in service as per terms of the contract. In such case WTL will invoke the amount held back from the contractor as PBG.

30. BANKRUPTCY

If the contractor becomes bankrupt or have a receiving order made against him or compound with his creditors or being a corporation commence to be wound up, not being a voluntary winding up for the

purpose only or amalgamation or reconstruction, or carry on their business under a receiver for the benefit of their creditors or any of them, WTL shall be at liberty to terminate the engagement forthwith without any notice in writing to the contractor or to the liquidator or receiver or to any person in whom the contractor may become vested and without any compensation to give such liquidator or receiver or other person the option of carrying out the engagement subject to their providing a guarantee for the due and faithful performance of the engagement up to an amount to be determined by WTL.

31. FORCE MAJEURE

It is hereby defined as any cause, which is beyond the control of the Contractor or WTL as the case may be, which such party could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affect the performance of the contract, such as

- War, Hostilities or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy and civil war.
- Rebellion, revolution, insurrection, mutiny, usurpation of civil or military, government, conspiracy, riot, civil commotion and terrorist area.
- Confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de facto authority or ruler, or any other act or failure to act of any local state or national government authority.
- Strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage of power supply epidemics, quarantine and plague.
- Earthquake, landslide, volcanic activity, fire flood or inundation, tidal wave, typhoon or cyclone, hurricane, nuclear and pressure waves or other natural or physical disaster.

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

The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect of the event of Force Majeure upto its or their performance of the Contract and to fulfill its or their obligation under the Contract but without prejudice to either party's right to terminate the Contract.

No delay or nonperformance by either party to this Contract caused by the occurrence of any event of Force Majeure shall.

- Constitute a default or breach of the contract.
- Give rise to any claim from damages or additional cost or expense occurred by the delay or nonperformance. If, and to the extent, that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.

32. INSURANCE COVERAGE

Appropriate insurance to cover all solution components for the transit period and until the time of its acceptance at the respective site is to be taken by the contractor. As the contractor will carry the risk for the material in his books during transit, the contractor should arrange insurance for the total system as period from the dispatch till Acceptance Test is successfully achieved. Further the contractor is to take all required insurance coverage in respect of all its personnel who shall be working on this engagement.

33. WARRANTY

The OEM on behalf of bidder will provide warranty that products supplied under the contract are newly made and are free from defects in the design, engineering and workmanship. The Contractor would be responsible for the up keep and maintenance of all Devices and necessary deliverables under the scope

of work during the entire warranty period, i.e., 36 months from the date of final acceptance of the system or 38 months from date of delivery whichever is earlier. The warranty must be provided directly from OEM. The Contractor/OEM shall not, without the express prior written consent of WTL, assign to any third party of the contract or part thereof. Service support for the entire warranty period will be on site and comprehensive (including spares) and free of cost for the entire warranty period. Warranty will be invalid if the equipment is serviced by unauthorized personnel of misuse is detected.

34. WARRANTY SUPPORT

The total system will be warranted against bad workmanship and manufacturing defects from the date of acceptance of the system whole or part. Service support for the entire warranty period will be on site and comprehensive (including spares and all other support) and free of cost for the entire warranty period.
The warranty must include, if not mentioned herein otherwise, but not limited to the following on site services: -

a) Free-of-cost all services required during the entire warranty period that should result in complete restoration of the equipment to its fully functional status.
b) Mustprovideforfree-of-costcompletereplacementoftheconcernedmoduleoftheequipment, for any fault, malfunctioning or defect found in the warranty period.
c) Provide for free-of-cost replacement of defective components/parts of the equipment for the warranty period.
d) Provide for services of repair & maintenance for the warranty period.
e) Provide for repetitive replacement of defective parts subject to reduction of the warranty period of the concerned new part/component to the extent of the warranty life consumed by the old replaced part, counted from the date of start of warranty period.

During the Warranty Period, the Supplier will provide at no additional cost to the Purchaser all new versions, releases, and updates for all Standard Software that are used in the System. **I**n cases where the new version, release, or update adversely affects System operation or performance, or requires extensive reworking of the System, the Supplier shall continue to support and maintain the version or release previously in operation for as long as necessary to allow introduction of the new version, release, or update.

35. PERFORMANCE BANK GUARANTEE (PBG)

As a guarantee for timely delivery, installation and commissioning of equipment as well as performance of on-site warranty support, as mentioned in Bill of Material, from the date of final acceptance of systems and pertaining to proper running of the systems, the bidder will have to submit 10% of the contract value as security in the form of Performance Bank Guarantee from any nationalized bank as per format enclosed (Section – O).

36. CONTRACTOR'S RESPONSIBILITIES

Refer Section – A (Scope of Work & Responsibility)

37. NO WAIVER OF RIGHTS

Neither the inspection by WTL or any of their agents nor any order by WTL for payment of money or any payment for or acceptance of the whole or any part of the works by WTL, nor any extension of time, nor any possession taken by WTL shall operate as a waiver of any provision of the contract or of any power reserved to WTL, or any right to damages here in provided, nor shall any waiver of any breach in the contract be held to be a waiver of any other subsequent breach.

38. GRAFTS, COMMISSIONS, GIFTS, ETC.

It is the Purchaser's policy to require that bidders, suppliers, contractors and consultants under contracts, observe the highest standard of ethics during the procurement and execution of such contracts. Any graft, commission, gift or advantage given, promised or offered by or on behalf of the contractor or his partner, agent, officers, director, employee or servant or any one on his or their behalf in relation to the obtaining or to the execution of this or any other contract with WTL shall in addition to any criminal liability which it

may incur, subject the contractor to the cancellation of this and all other contracts and also to payment of any loss or damage to WTL resulting from any cancellation. WTL shall then be entitled to deduct the amount so payable from any monies otherwise due to the contractor under contract.

39. ENFORCEMENT OF TERMS

The failure of either party to enforce at any time any of the provision of this contract or any rights in respect thereto or to exercise any option here in provided shall in no way be construed to be a waiver to such provisions, rights or options or in any way to affect the validity of the contract. The exercise by either party of any of its rights herein shall not preclude or prejudice either party from exercising the same or any other right it may have hereunder.

40. PERIOD OF VALIDITY OF OFFER

For the purpose of placing the order, the proposals shall remain valid till 180 days. During the period of validity of proposals, the rates quoted shall not change. In exceptional circumstances, WTL may ask for extension of the period of validity and such a request shall be binding on Bidders. WTL's request and the response to such a request by various Bidders shall be in writing. A Bidder agreeing to such an extension will not be permitted to increase its rates.

41. TAXES & DUTIES

- The prices shall be inclusive of all taxes & levies including GST and other statutory duties as applicable. Rate of taxes should be indicated separately in the Price Bid.
- Contract Price specified in Price Bid should be based on the taxes & duties and charges prevailing at the date one day prior to the last date of Bid submission.
- Statutory deduction, wherever applicable, shall be made from invoice as per government rules. Necessary certificate will be issued for such deductions.
- Bidder submitting a bid shall produce valid statutory documents / certificates with respect to GST, Income Tax, ROC, Prof. Tax, Trade Licence, etc. All such documents / certificates shall remain valid on the last date of tender submission.
- In case of inter-state transaction, WTL will provide "Waybill". However, statutory charges, if any will be borne by the bidder.
- GST component of the invoice of the bidder may be kept on hold in case there ia any mismatch / irregularity in GST return filling on the part of the bidder.

42. DISCREPANCIES IN BID

- Discrepancy between description in words and figures, the rate which corresponds to the words quoted by the bidder shall be taken as correct.
- Discrepancy in the amount quoted by the bidder due to calculation mistake of the unit rate then the unit rate shall be regarded as firm.
- Discrepancy in totaling or carry forward in the amount quoted by the bidder shall be corrected.

43. BID DUE DATE

The online tender has to submitted not later than the due date and time specified in the Important Dates Sheet. WTL may as its discretion on giving reasonable notice by fax, or any other written communication to all prospective bidders who have been issued the bid documents, extend the bid due date, in which case all rights and obligations of the WTL and the bidders, previously subject to the bid due date, shall thereafter be subject to the new bid due date as extended.

44. LATE BID

Any proposal received by WTL after the deadline for submission of proposals may not be accepted.

45. OPENING OF BID BY WTL

Bids shall be opened and downloaded electronically through operation of the process in the e-Tender portal in presence of Tender Committee. Bidders interested to remain present during electronic bid opening may attend the bid opening session at WTL premises at scheduled date & time.

46. CONTACTING WTL

Bidder shall not approach WTL officers beyond office hours and/or outside WTL office premises from the time of the Bid opening to the time of finalization of successful bidder. Any effort by bidder to influence WTL office in the decision on Bid evaluation, bid comparison or finalization may result in rejection of the Bidder's offer. If the bidder wishes to bring additional information to the notice of WTL, it should be in writing following the procedure mentioned hereinabove.

47. WTL'S RIGHT TO REJECT ANY OR ALL BIDS

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

48. BID CURRENCIES

Prices shall be quoted in Indian Rupees, inclusive of all prevailing taxes, levies, duties, cess etc.

49. PRICE

- Price should be quoted in the BOQ format only. No deviation is acceptable.
- Price quoted should be firm, inclusive of packing, forwarding, insurance and freight charges.
- Percentage/specified amount of taxes & duties should be clearly mentioned otherwise WTL reserves the right to reject such vague offer.
- Price to be quoted inclusive of supply, installation & commissioning charges.

50. CANVASSING

Canvassing or support in any form for the acceptance of any tender is strictly prohibited. Any bidder doing so will render him liable to penalties, which may include removal of this name from the register of approved Contractors.

51. NON-TRANSFERABILITY OF TENDER

This tender document is not transferable.

52. FORMATS AND SIGNING OF BID

The original and all copies of the proposals shall be neatly typed and shall be signed by an authorized signatory(ies) on behalf of the Bidder. The authorization shall be provided by written Power of Attorney accompanying the proposal. All pages of the proposal, except for un-amended printed literature, shall be initialed by the person or persons signing the proposal. The proposal shall contain no interlineations, erase or overwriting. In order to correct errors made by the Bidder, all corrections shall be done & initialed with date by the authorized signatory after striking out the original words/figures completely.

53. WITHDRAWAL OF BID

Bid cannot be withdrawn during the interval between their submission and expiry of Bid's validity period. Fresh Bid may be called from eligible bidders for any additional item(s) of work not mentioned herein, if so required.

54. INTERPRETATION OF DOCUMENTS

If any bidder should find discrepancies or omission in the specifications or other tender documents, or if he should be in doubt as to the true meaning of any part thereof, he shall make a written request to the tender inviting authority for correction/clarification or interpretation or can put in a separate sheet along with his technical bid document.

54. SPLITTING OF THE CONTRACT AND CURTAILMENT OF WORK

WTL reserve the right to split up and distribute the work among the successful bidders and to curtail any item of work in the schedule partly or fully.

55. PREPARATION OF TENDER

Tender shall be submitted in accordance with the following instructions:

a) Tenders shall be submitted in the prescribed forms. Digital signatures shall be used. Where there is conflict between the words and the figures, the words shall govern.
b) All notations must be in ink or type written. No erasing or overwriting will be permitted. Mistakes may be crossed out and corrections typed or written with ink adjacent thereto and must be initialed in ink by the person or persons signing the tender.
c) Tenders shall not contain any recapitulation of the work to be done. Alternative proposals will not be considered unless called for. No written, oral, telegraphic or telephonic proposals for modifications will be acceptable.
d) Tenders shall be uploaded as notified on or before the date and time set for the opening of tenders in the Notice Inviting Tenders.
e) Tenders subject to any conditions or stipulations imposed by the bidder are liable to be rejected.
f) Any bidder may withdraw his tender by written request at any time prior to the scheduled closing time for receipt of tenders and not thereafter.

56. PRE-DISPATCH INSTRUCTION

All materials / equipments supplied against the purchase order shall be subjected to Inspection, check and /or test by the authorized representative from WTL.

57. FINAL INSPECTION

Final inspection will be carried by the authorized representative from WTL.

58. SITE INSPECTION

Bidder can inspect (at their own cost) the sites if required, for which they have to take necessary permission from WTL in writing. WTL will take at least four days to organize such permission.

59. ERASURES OR ALTERNATIONS

The offers with overwriting and erasures may make the tender liable for rejection if each of such overwriting/erasures/manuscript ions is not only signed by the authorized signatory of the bidder. There should be no hand-written material, corrections or alterations in the offer. Technical details must be completely filled up. Correct technical information of the product being offered must be filled in. Filling up of the information using terms such as "OK", "accepted", "noted", "as given in brochure/manual" is not acceptable. The Customer may treat offers not adhering to these guidelines as unacceptable. The Customer may, at its discretion, waive any minor non-conformity or any minor irregularity in the offer. This shall be binding on all bidders and the Tender Committee reserves the right for such waivers.

60. COMPLIANCE WITH LAW

The contractor hereto agrees that it shall comply with all applicable union, state and local laws, ordinances, regulations and codes in performing its obligations hereunder, including the procurement of licenses, permits certificates and payment of taxes where required. The contractor shall establish and maintain all proper records (particularly, but without limitation, accounting records) required by any law, code/practice of corporate policy applicable to it from time to time including records and returns as applicable under labor legislation.

61. CLARIFICATION OF BIDS

During evaluation of the bids, the Customer/Tender Committee, at its discretion may ask the bidder for clarification of its bid. The request for the clarification and the response shall be in writing (fax/email) and no change in the substance of the bid shall seek offered or permitted.

62. QUALITY CONTROL

- The contractor is obliged to work closely with WTL and/or West Bengal State Beverages Corporation Ltd., act within its authority and abide by directive issued by them on implementation activities.
- The contractor will abide by the safety measures and free WTL and West Bengal State Beverages Corporation Ltd. from all demands or responsibilities arising from accident/loss of life, the cause of which is due to their negligence. The bidder will pay all indemnities arising from such incidents and will not hold WTL and West Bengal State Beverages Corporation Ltd. responsible.
- The contractor will treat as confidential all data and information about the system, obtained in the execution of its responsibilities in strict confidence and will not reveal such information to any party without the prior written approval of WTL/ West Bengal State Beverages Corporation Ltd..
- WTL reserves the right to inspect all phases of contractor's operation to ensure conformity to the specifications. WTL shall have engineers, inspectors or other duly authorized representatives made known to the contractor, present during the progress of the work and such representatives shall have free access to the work at all times. The presence or absence of representatives of WTL does not relieve the contractor of the responsibility for quality control in all phases.
- The Court of Kolkata only will have the jurisdiction to deal with and decide any legal matters or dispute whatsoever arising out of the contract.

63. SERVICE LEVEL SUPPORT - MATRIX

Details of the SLA Matrix for the Project as an Overall -
Post Deployment Support

Supplier shall provide a telephonic line (Non-Toll Free) under the AMC & Technical Support scheme, which will be available with a support window of Monday to Friday from 10AM to 7PM to resolve any technical issue about the device both during installation as well as servicing. This line shall remain common for NKDA related projects. There shall be an email system as well, to handle, identify and resolve open tickets.
Post Installation support activities will include:

- **Platform Support Under Technical Support for the platform only - End to end support**
- **SLA support response and severity code: -**

Severity Code	Initial Response	Estimation Response	Subsequent Responses	Resolution
1	15 minutes	2 hours	Every 30 min.	4 hours
2	30 minutes	2 hours	Every 2 hours	8 hours
3	1 hour	8 hours	Every 4 hours	4 calendar days
4	1 hour	Next business day	Weekly	14 calendar days

- **We shall provide the following resources for onsite support: -**
  - **Hardware Technical Engineer matching category of Sr.Dev – 1 Resource – Day Shift**
  - **Software Systems Technical Engineer matching category of Sr.Dev – 1 Resource – Day Shift**
  - **The system support shall be provided 7 Days a Week, 24 Hour basis**
  - **For Sundays, 2nd shifts & Night shifts, 1 Engineer shall be available on site & 1 Engineer to be available on call for any exigencies**

  Failing to meet the above requirement of engineers on any day shall be counted as breach of SLA & LD clause shall apply
- **Hardware Support under AMC – End to End support of the deployed Hardware till the specified support period.**
  - **SLA support and severity code: -**

Severity Code	Initial Response	Estimation Response	Subsequent Responses	Resolution

1A	1 hour	Next business visit	Every 1 Day	3 calendar days
2A	1 hour	Next business visit	Weekly	10 calendar days

- **We shall provide a Monthly preventive maintenance visit for all concerned hardware.**

Hardware Support - When an issue is concluded to have a hardware issue, the material shall be picked up by Supplier logistics partner and on delivery of the same to our premises in Kolkata, Supplier shall dispatch the replacement within due course of time as by the OEM.

- **Severity Code Explanation (Software) – Software Functional level Severity Code explanation.**
  - **SLA support and severity code: -**

Severity Code	Description
1	The Software Service has completely ceased to function including: (1) no ability to access or login into the Software Service; or (2) no Session Replays are being generated. The Software Service has a material adverse impact on User's website/ICCC Admin Side Mobile App (i.e. performance or UI).
2	The Software Services are working, but certain functionalities of the Software Service are unavailable which requires attention/solution as soon as possible. For example: Summary Report, Maps, etc.
3	These are minor issues that do not fall under any of the above severity levels and that do not have any significant impact on the ability to use the Software Service features and functionalities. (i.e. cosmetic issues or isolated issues with a feature - e.g. a single Map or Report contains an error)
4	Minor Incident affecting a small number of Users, technical inquiry or 'how to' question relating to Service functionality. • Any problem with platform infrastructure not related with immediate ICCC application • Any problem from mismanagement and unsupported processes • General usage, installation or configuration question • Cosmetic issues, including errors in the documentation • Any problem due to configuration changes in production systems (Technical Assistance) • Questions about integration (Integration Assistance) • Problems on non-production systems, such as test and development systems • Feature requests (Feature Enhancement)

- **Severity Code Explanation (Hardware) – Hardware Functional level Severity Code explanation.**
  - **SLA support and severity code: -**

Severity Code	Description
1A	• A production hardware server is down or does not boot. • Data unavailability on production Application Storage cluster. • A virtual environment (container or virtual machine) with business-critical service does not start or is unavailable. Business critical service does not work after backup restoration or after migration.
2A	• Significant performance degradation of a crucial service that causes high impact on business operations for a significant number of end-users. Once workaround is available and situation is stabilized the issue becomes Lower Severity.

	• **A new installation does not function, the system does not boot, hangs or crashes, and it blocks further deployment/provisioning of virtual environments.** • **A production system has a major issue after installation of software updates (e.g. new virtual machines are not created) and the issue remains after updates are removed.** • **Assistance with recovering system after hardware failure.** • **A problem is affecting production HA cluster Storage and is causing service disruption. Excluding the problems falling outside the Scope of Technical support. Eg:- Hardware OEM intervention required.**

Note: The above-mentioned hardware is designed for high availability, in cases of mentioned hardware failures, the above SLA shall be applicable.

Vendor Termination Clause: -
Termination possibility of MSI in the case of multiple cases of failure to meet SLA terms beyond monthly commitments for 6(six) continuous months

64. GENERAL TERMS

a) All the documents to be submitted by the bidder along with their offer should be duly authenticated by the person signing the offer and if at any point of time during procurement process or subsequently it is detected that documents submitted are forged/tampered/manipulated in any way, the total responsibility lies with the bidder and WTL reserves the full right to take action as may be deemed fit including rejection of the offer and such case is to be kept recorded for any future dealing with them.
b) No Technical/Commercial clarification will be entertained after opening of the tender.
c) Quantity mentioned in the tender document is indicative only and orders shall be placed subject to actual requirement. WTL reserve the right to increase or decrease the quantity specified in the tender.
d) WTL reserve the right to reject or accept or withdraw the tender in full or part as the case may be without assigning the reasons thereof. No dispute of any kind can be raised the right of buyer in any court of law or elsewhere.
e) WTL reserve the right to ask for clarification in the bid documents submitted by the bidder. Documents may be taken if decided by the committee.
f) Supporting technical brochures/catalogues indicating each feature in respect of offered model and make must be submitted along with the offer, in absence of which the offer is liable to be ignored.
g) No dispute by the bidders in regard to Technical/Commercial points will be entertained by WTL and decision taken by the Tender Committee will be final.
h) Discrepancy in the amount quoted by the bidder due to calculation mistake, the unit rate shall be regarded as firm and the totaling or carry in the amount quoted by the bidder shall be corrected accordingly.
i) The price offers shall remain firm within the currency of contract and no escalation of price will be allowed.
j) The acceptance of the tender will rest with the accepting authority who is not bound to accept the lowest or any tender and reserves the right to reject in part or in full any or all tender(s) received and to split up the work among participants without assigning any reason thereof.
k) The customer/WTL at its discretion may extend the deadline for the submission of Bids.
l) The Court of Kolkata only will have the jurisdiction to deal with and decide any legal matters or dispute whatsoever arising out of the contract.

WEBEL TECHNOLOGY LIMITED

SECTION – E

BID FORM

(Bidders are requested to furnish the Bid Form in the Format given in this section, filling the entire Blank and to be submitted on Letter Head in original)

To
Webel Technology Limited
Plot – 5, Block – BP, Sector - V,
Salt Lake City,
Kolkata – 700091.

Sub: Supply, Installation, Commissioning and Maintenance of integrated City Command and Control system for NKSGCCL.

Dear Sir,

1. We the undersigned bidder/(s), having read and examined in details the specifications and other documents of the subject tender no. WTL/NKGS/ICCC/20-21/013 dated 18.12.20, do hereby propose to execute the job as per specification as set forth in your Bid documents.

2. The prices of all items stated in the bid are firm during the entire period of job irrespective of date of completion and not subject to any price adjusted as per in line with the bidding documents. All prices and other terms & conditions of this proposal are valid for a period of 180 (one hundred eighty) days from the date of opening of bid. We further declare that prices stated in our proposal are in accordance with your bidding.

3. We confirm that our bid prices include all other taxes and duties and levies applicable on bought out components, materials, equipments and other items and confirm that any such taxes, duties and levies additionally payable shall be to our account.

4. Earnest Money Deposit: We have enclosed the EMD Bank Guarantee for a sum of Rs. 8000000.00.

5. We declare that items shall be executed strictly in accordance with the specifications and documents irrespective of whatever has been stated to the contrary anywhere else in our proposal. Further, we agree that additional conditions, deviations, if any, found in the proposal documents other than those stated in our deviation schedule, save that pertaining to any rebates offered shall not be given effect to.

6. If this proposal is accepted by you, we agree to provide services and complete the entire work, in accordance with schedule indicated in the proposal. We fully understand that the work completion schedule stipulated in the proposal is the essence of the job, if awarded.

7. We further agree that if our proposal is accepted, we shall provide a Performance Bank Guarantee of the value equivalent to ten percent (10%) of the Order value as stipulated in Financial Bid (BOQ).

8. We agree that WTL reserves the right to accept in full/part or reject any or all the bids received without any explanation to bidders and his decision on the subject will be final and binding on Bidder.

Thanking you, we remain,

WEBEL TECHNOLOGY LIMITED

Yours faithfully

……
Signature

……..
Name in full

……..
Designation

Signature & Authorized Verified by

……
Signature

……
Name in full

……
Designation

……
Company Stamp

Dated, this ……..day of ……2020

WEBEL TECHNOLOGY LIMITED

SECTION – F

TECHNO COMMERCIAL EVALUATION & AWARDING OF CONTRACT

1. EVALUATION PROCEDURE

- The Eligibility Criteria (Section - B) will be evaluated by Tender Committee and those qualify will be considered for further evaluation.
- After qualifying in Eligibility Criteria, Tender Committee shall verify the Technical Specification (Technical Specification with Compliance Statement, Section – I) Deviation in specification shall not be allowed. Bidder qualified in Technical Specification shall be considered for further evaluation.
- After qualifying in Technical Specification, Tender Committee would evaluate the Techno Commercial Evaluation. In order to facilitate the evaluation, the marking scheme presented is an indication of the relative importance of the evaluation. Bidders securing a minimum of 80% marks in the Techno Commercial Evaluation shall be considered for further evaluation.
- Bidders after qualifying in Techno Commercial Evaluation will only be considered for Financial Bid evaluation.

2. EVALUATION CRITERIA

Techno Commercial Evaluation

The evaluation methodology would take into consideration both the Techno Commercial responsiveness as well as the financial response. During the evaluation process, the evaluation committee will assign each desirable/preferred feature a whole number score for the Techno Commercial Bid as defined in the table below:

Sr. No.	Technical qualification parameter description		Maximum Marks
1.	City Surveillance Experience	The Bidder should have been awarded and successfully designed, executed & commissioned project(s) on City surveillance with video analytics system integration of minimum value of INR 5 Crores during last five years (as on Bid Submission date) per project. Marks shall be allotted as below: >=2 Projects: 10 Marks 1 Project: 8 Mark OR The Bidder should have been awarded and successfully designed any Datacenter and project value of INR 5 Crores during last five years (as on Bid Submission date) per project. Marks shall be allotted as below: >=2 Projects: 10 Marks 1 Project: 8 Mark	10

2.	ITMS or Surveillance Experience **Need to mention some project related to CCTV**	The Bidder should have been awarded and successfully designed, executed & commissioned project(s) on Integrated Traffic Management System of minimum value of INR 2 Crores per project with the following components during last five years (as on Bid Submission date) Components: • Controlling Traffic Signals with centralized software system/ Adaptive Traffic Control System AND • RLVD System / ANPR System OR Integration and deployment of CCTV project of minimum value of INR 10 Crores per project with the following components during last five years (as on Bid Submission date) Components: • VMS • Outdoor & Indoor Should have the experience of integrating with such systems Marks shall be allotted as below: >=2 Projects: 10 marks 1 Project: 8 marks	10
3.	Certifications	The bidder having followings Valid certifications: • ISO 20000(latest) for IT Service Management • ISO 27001(latest) for Information Security Management System • ISO 9001:2008 or equivalent • CMM level 5 or above certification All 4 Certificate: 10 marks Per Certificate: 2.5 marks	10

4.	Design, Build and Maintenance of Integrated Command and Control Centre Or Data Centre Or any Project on IOT	The Bidder have been awarded and successfully designed, executed & commissioned and Operation & Maintenance of Integrated command & control room/ emergency response Centre /Security and Surveillance control room/ Surveillance control room / Data Centre built for any State/ Central Government Department or Central/ State PSUs/ Smart City in India of minimum value of INR 10 Crores per projects during last Five (5) years (as on Bid Submission date) >=2 Projects: 10 marks 1 Project: 8 marks	10
5.	Data Centre & WAN experience Or IOT	The bidder shall have successfully executed below mentioned project in last five years: 1. Data Centre/DR Or IOT 2.Fiber Optics Network Capability 3. WAN project of more than 200 location Cumulative project Value: >100 Cr.=10 Marks >INR 50 Cr-100 Cr=8 =INR 50 Cr =5 Marks	10
6.	Other Smart Solution- **Any 3 smart projects will suffice. Smart Pole, Smart Solar, Smart Display Board, etc**	1. Intelligent Kisok 2. Automatic fare collection system Bidder having experience of all 2 above Solution- 10 Marks 1 Solution- 5 Marks	10
7.	Approach & Methodology	a. Understanding of the Project b. Approach and Methodology c. Scalability, Security and integration d. Project Plan covering Scope Mgt, Schedule Mgt, Cost Mgt, Quality Mgt, Resource Mgt, Communication Mgt, Risk Mgt, Procure Mgt & Stake holder Mgt e. Team and Governance of the project	20 (Bidder needs to provide presentation document exploring the points mentioned)
8.	Approach & Inspection Plan of OFC Connectivity	Right of Way Report with NOC from relevant authorities for the Optical Fiber laying & termination.	5
8.	Annual Turnover	Average annual turnover as mentioned below For over the last three financial year i.e. 2017- 18,2018-19,2019-2020. Marks shall be allotted as given below >=250 Cr=15 Marks >150 Cr and < 250 Cr: 10 Marks	15

All claims to be supported by relevant documents / certificates. Onus of substantiating claims lies with the bidder.

3. FINAL EVALUATION

Financial bid of the qualified bidders shall be downloaded on the scheduled date & time in the presence of the Tender Committee. Final evaluation will be done among the short listed bidders in accordance with Quality & Cost and will involve both Techno Commercial & Financial Evaluation with the following weight-age.

A	Techno Commercial Evaluation	80%
B	Financial Evaluation	20%

Commercial Bid Score (BS) will be calculated for each responsive bid using the following formula which permits a comprehensive assessment of the bid price and techno commercial merits of each bid.

$$BS = \frac{TC}{TTC} \times 0.80 + \frac{LBP}{BP} \times 0.20$$

Where

BS	-	Evaluated Bid Score
BP	-	Amount of Bid Price of bidder
LBP	-	Lowest Amount of Bid Price among bidders
TC	-	Techno Commercial Score awarded to bidder
TTC	-	Total Techno Commercial Score (100 marks in this case)

The bid with the highest Evaluated Bid Score (BS) among the responsive bids shall be most responsive bid.

4. AWARDING OF CONTRACT

An affirmative Post Qualification determination will be prerequisite for award of the contract to the lowest quoted bidder. A negative determination will result in rejection of bidder's bid, in which event the WTL will proceed to the next lowest evaluated bidder to make a similar determination of that bidder's capability to perform satisfactorily. The successful bidder (s) will have to give security deposit in the form of Performance Bank Guarantee.

5. POST QUALIFICATION

The determination will evaluate the Bidder's financial, technical, design, integration, customization, production, management and support capabilities and will be based on an examination of the documentary evidence of the Bidder's qualification, as well as other information WTL deems necessary and appropriate. This determination may include visits or interviews with the Bidder's client's reference in its bid, site inspection, and any other measures. At the time of post-qualification, Directorate of es may also carry out tests to determine that the performance or functionality of the Information System offered meets those stated in the detailed Technical Specification.

6. PRESENTATION

The presentation to given in front of the Tender Committee. The date, time and venue of the presentation for the qualified bidders will be intimated in due course.

WEBEL TECHNOLOGY LIMITED

SECTION – G

GUIDANCE FOR E-TENDERING

Instructions / Guidelines for electronic submission of the tenders have been annexed for assisting the Bidders to participate in e-Tendering.

- **Registration of Bidder:**
  Any Bidder willing to take part in the process of e-Tendering will have to be enrolled & registered with the Government e-Procurement System through logging on to **https://wbtenders.gov.in.** The Bidder is to click on the link for e-Tendering site as given on the web portal.

- **Digital Signature Certificate (DSC):**
  Each Bidder is required to obtain a Class-II or Class-III Digital Signature Certificate (DSC) for submission of tenders from the approved service provider of the National Informatics Centre (NIC) on payment of requisite amount. Details are available at the Web Site stated above. DSC is given as a USB e-Token.

- The Bidder can search & download N.I.T. & BOQ electronically from computer once he logs on to the website mentioned above using the Digital Signature Certificate. This is the only mode of collection of Tender Documents.

- **Participation in more than one work:**
  A prospective bidder shall be allowed to participate in the job either in the capacity of individual or as a partner of a firm. If, found to be applied severally in a single job all the applications will be rejected.

- **Submission of Tenders:**
  Tenders are to be submitted through online to the website stated above in two folders at a time, one in Techno Commercial Proposal & the other is Financial Proposal before the prescribed date & time using the Digital Signature Certificate (DSC). The documents are to be uploaded virus scanned copy duly Digitally Signed. The documents will get encrypted (transformed into non readable formats)

The proposal should contain scanned copies of the following in two covers (folders).

Techno Commercial Cover:

Technical Document1 (scanned & join in pdf format then upload)

1. Copy of Remittance details/Bank Guarantee of Earnest Money Deposit (EMD)
2. Copy of Remittance details of Tender Fee

Technical Document2 (scanned & join in pdf format then upload)

1. N I T Declaration duly stamped & signed in bidder's letter head, Section – P
2. Bid Form as per format (Section – E)

Technical Compliance (scanned & join in pdf format then upload)

1. Documents as per Section – I
2. Declaration as per Section – B
3. Documents as per Section – F

Financial Cover:

BOQ will be downloaded and same will be uploaded with quoted rates. While uploading BOQ file name shall remain unchanged. Absence of this document shall lead to summary rejection of the bid.

WEBEL TECHNOLOGY LIMITED

NON-STATUTARY COVER (MY SPACE) CONTAIN FOLLOWING DOCUMENT:
(In each folder, scanned coy will be uploaded with single file having multiple pages)

Sl. No.	Category Name	Sub Category Name	Sub Category Description
A	CERTIFICATES	A1. CERTIFICATES	• GST Registration Number • PAN • Document as per Section – B
B	COMPANY DETAILS	B1. COMPANY DETAILS 1	• Document as per Section – B • Declaration as per Section – B
		B2. COMPANY DETAILS 2	• Company Profile (Not more than 3 pages) • ISO Certificate as per Section – F
C	CREDENTIAL	CREDENTIAL 1	• Order copies as per Section – B/F
		CREDENTIAL 2	• Product brochure • Other documents, if any
D	DECLARATION	DECLARATION 1	• List of Clients as per format (Section – N) • Financial Capability of Bidder as per format (Section – K)
		DECLARATION 2	• Other documents, if any
		DECLARATION 3	Bidder's Details as per format (Section – L)
		DECLARATION 4	Details of Order as per format (Section – J)
		DECLARATION 5	Declaration as per Section – B
F	FINANCIAL INFO	P/L & BALANCE SHEET 2016-2017	P/L & BALANCE SHEET 2017-2018
		P/L & BALANCE SHEET 2017-2018	P/L & BALANCE SHEET 2018-2019
		P/L & BALANCE SHEET 2018-2019	P/L & BALANCE SHEET 2019-2020

WEBEL TECHNOLOGY LIMITED

SECTION – H

BILL OF MATERIAL

SL#	Item Description	UOM	Qty
1	Local Application Aggregating Device	Nos.	5
2	Local Application Buffer NAS	Nos.	1
3	Local Networking Switch & Routers	Nos.	2
4	55 inch Video Wall With Controller & Accessories	Nos.	36
5	Call Centre and Support System Hardware per person	Nos.	4
6	Anti-room Conferencing System with 4 Screen Video Wall & VC Setup & Furniture & Acc.	Nos.	1
7	Room Infra and Interior Readiness -Wall -Ceiling -Carpet -Furniture -Civil -interior	Job	1
8	Smart Server Rack	Nos.	2
9	A3 Multi Function Colour Printer	Nos.	2
10	Monitoring Work Stations	Nos.	10
11	Monitoring Laptops	Nos.	5
12	Security Systems and Firewall	Nos.	1
13	Precision Aircon for UPS Room	Nos.	2
14	UPS And Power Regulation Equipment	Nos.	1
15	Fire, IBMS, Biometric, CCTV	Nos.	1
16	Electrical Fittings and Setup	Job	1
17	100 Mbps Internet Leased Line Connection per Year	Nos.	3
18	12-core Outside Plant OFC Cable & Laying - from State Data Centre to NKDA New Admin Building	Nos.	1
19	Cyber Security Package and Quaterly Aduit and Certification per Year	Nos.	3
20	Recurring Communication Chanels like SMS, EMAIL, Phone & Others recurring per Year Cost	Nos.	3
21	Video Wall Integration, Installation & Testing	Job	1
22	Call Centre Hardware Integration with Communication Channels	Job	1
23	Network Side basic Wire Laying	Job	1
24	Sr. Developer (3-4 Yrs Ex)	Man Months	12
25	Developers (0-2 Yrs Ex)	Man Months	12
26	Tester (2 Yrs Ex)	Man Months	12
27	Quality Expert	Man Months	4
28	Documentation Expert	Man Months	8
29	UI Designer	Man Months	12
30	Principle Solution Architect	Man Months	4
31	IoT Solution & Architecture Expert	Man Months	6
32	Data Science Consultant	Man Months	3
33	Database System Admin	Man Months	8

34	Offshore Developer for API collection	Man Months	8
35	Middleware - DB cum API Developer (min 3 yrs Ex)	Man Months	16
36	Sr Application Developer with Experience in Mobile app (Min 5 yrs Ex)	Man Months	6
37	Sr Application Developer with Experience in Mobile app (Min 3 yrs Ex)	Man Months	9
38	ICCC Smart City Platform - Perpetual License	Unit Licence	1
39	All 3rd Party License Cost including GIS Platform, Maps, OTC Software per Year	Year	3
40	Future Silo solution Integration per Solution	Total No. of Silo Sols	36
41	RECURRING COST AMC COST For 0-12th Month	Months	12
42	RECURRING COST AMC COST For 13-24th Month	Months	12
43	RECURRING COST AMC COST For 25-36th Month-Next Year	Months	12
44	Extended Technical Support for 0-12 th Month	Months	12
45	Extended Technical Support for 13-24th Month	Months	12
46	Extended Technical Support for 25-36th Month	Months	12

WEBEL TECHNOLOGY LIMITED

SECTION - I

TECHNICAL SPECIFICATION WITH COMPLIANCE STATEMENT
(Tender No. WTL/NKGS/ICCC/20-21/013)

Please refer to Annexure – I appended at the end of this tender document

- Bidder should submit all relevant data sheet/brochure of all quoted items and should also available in respective OEM's official website.
- Bidder should indicate items mentioned in the OEM data sheet / brochure by marking minimum specification as mentioned in this RFP

Authorized Signatory (Signature In full): _____

Name and title of Signatory: _____

Stamp of the Company: _____

WEBEL TECHNOLOGY LIMITED

SECTION - J

DETAILS OF ORDERS EXECUTED BY BIDDER

(Tender No. WTL/NKGS/ICCC/20-21/013)

Sl. No.	Order No.	Order Date	Order Value	Brief description of items and job details	Completed (Yes/No)	Name of the Customer	Contact details of the Customer

Authorized Signatory (Signature In full): _____

Name and title of Signatory: _____

Stamp of the Company: _____

WEBEL TECHNOLOGY LIMITED

SECTION – K

FINANCIAL CAPABILITY OF BIDDER

(Tender No. WTL/NKGS/ICCC/20-21/013)

FINANCIAL INFORMATION

Sl. No.	Name of the Bidder	Turnover (Rs. / Crores)		
		2017-18	2018-19	2019-20
1				

Authorized Signatory (Signature In full): _____

Name and title of Signatory: _____

Stamp of the Company: _____

WEBEL TECHNOLOGY LIMITED

SECTION – L

BIDDERS'S DETAILS

(Tender No. WTL/NKGS/ICCC/20-21/013)

1	Name of the Firm	
2	Registered Office Address	
	Contact Number	
	Fax Number	
	E-mail	
3	Correspondence / Contact address	
	Name & Designation of Contact person	
	Address	
	Contact Number	
	Fax Number	
	E-mail	
4	Is the firm a registered company? If yes, submit documentary proof	
	Year and Place of the establishment of the company	
6	Former name of the company, if any	
7	Is the firm ▪ a Government/ Public Sector Undertaking ▪ a propriety firm ▪ a partnership firm (if yes, give partnership deed) ▪ a limited company or limited corporation ▪ a member of a group of companies, (if yes, give ▪ name and address and description of other companies) ▪ a subsidiary of a large corporation (if yes give the name and address of the parent organization). If the company is subsidiary, state what involvement if any, will the parent company have in the project.	
8	Is the firm registered with Sales Tax department? If yes, submit valid GST Registration certificate.	
9	Is the firm registered for Service Tax with Central Excise Department (Service Tax Cell)? If yes, submit valid Service Tax registration certificate.	
10	Total number of employees. Attach the organizational chart showing the structure of the organization.	
11	Are you registered with any Government/ Department/ Public Sector Undertaking (if yes, give details)	
12	How many years has your organization been in business under your present name? What were your fields when you established your organization	
13	What type best describes your firm? (Purchaser reserves the right to verify the claims if necessary) ▪ Manufacturer ▪ Supplier ▪ System Integrator ▪ Consultant ▪ Service Provider (Pl. specify details) ▪ Software Development ▪ Total Solution provider (Design, Supply,	

	Integration, O&M) ▪ IT Company	
14	Number of Offices in district headquarters in West Bengal	
15	Is your organization having ISO 9001:2015 certificates?	
16	List the major clients with whom your organization has been / is currently associated.	
17	Have you in any capacity not completed any work awarded to you? (If so, give the name of project and reason for not completing the work)	
18	Have you ever been denied tendering facilities by any Government / Department / Public sector Undertaking? (Give details)	
19	No blacklisting certificate	
20	Brief of Organization profile	
21	POA letter	
22	Data Centre & WAN Experience with project detail	
23	Smart Solution Detail	
24	ITMS experience with project detail	
25	City surveillance or CCTV Experience with project Detail	
26	Experience related to ICCC/Data Centre	
27	Bidder should submit Approach and Methodology with Technical solution meeting the requirement	
28	Bidder should submit Project Plan with timelines, resource allocation, milestones	
29	All CVs of the Manpower	
30	Bidder Certification Detail	
31	Authorized Signed Visit form of Site Inspection Survey	

Authorized Signatory (Signature In full): _____

Name and title of Signatory: _____

Company Rubber Stamp: _____

WEBEL TECHNOLOGY LIMITED

SECTION – M

PRE-BID MEETING QUERY

(Tender No. WTL/NKGS/ICCC/20-21/013)

Name of the Bidder:

Queries

Sl. No.	Section No.	Clause No.	Page No.	Queries

Note: The filled form to be submitted in XLS and PDF Format. There is a cut off date for receiving of queries before Pre Bid Meeting. Queries received after the cutoff period will not be accepted. The Purchaser reserves the right to respond all queries over e-mail.

Authorized Signatory (Signature In full): _____

Name and title of Signatory: _____

Company Rubber Stamp: _____

WEBEL TECHNOLOGY LIMITED

SECTION – N

LIST OF CLIENTS OF SIMILAR ORDERS
(Tender No. WTL/NKGS/ICCC/20-21/013)

Sl. No.	Name of the Client	Address	Contact Person	Designation	Contact Numbers

Authorized Signatory (Signature In full): _____

Name and title of Signatory: _____

Company Rubber Stamp: _____

WEBEL TECHNOLOGY LIMITED

SECTION – O

PROFORMA FOR PERFORMANCE BANK GUARANTEE

(On non-judicial stamp paper of appropriate value to be purchased in the name of executing Bank)

PROFORMA OF BANK GUARANTEE FOR SECURITY DEPOSIT –CUM-PRFORMANCE GUARANTEE

Ref …….. Bank Guarantee no…….

Date……..

PROFORMA OF BG FOR SECURITY DEPOSIT

KNOW ALL MEN BY THESE PRESENTS that in consideration of WEBEL TECHNOLOGY LIMTED, a Government of West Bengal Undertaking incorporated under the Companies Act, 1956 having its Registered office at Webel Bhavan, Block EP&GP, Sector V, Kolkata-700 091 (hereinafter called "The Purchaser") having agreed to accept from _____(hereinafter called "The Contractor") Having its Head Office at _____, a Bank guarantee for Rs. _____ in lieu of Cash Security Deposit for the due fulfillment by the Contractor of the terms & conditions of the Work Order No. _____dated_____ issued by the Purchaser for _____(hereinafter called "the said work order _____ _____dated_____)". We _____ (Name & detailed address of the branch) (hereinafter called "the Guarantor") do hereby undertake to indemnify and keep indemnified the Purchaser to the extent of Rs._____ (Rupees _____ _____) only against any loss or damage caused to or suffered by the Purchaser by reason of any breach by the Contractor of any of the terms and conditions contained in the said Work Order No. _____ dated_____ of which breach the opinion of the Purchaser shall be final and conclusive.

(2) AND WE, _____DO HEREBY Guarantee and undertake to pay forthwith on demand to the Purchaser such sum not exceeding the said sum of _____Rupees_____) only as may be specified in such demand, in the event of the Contractor failing or neglecting to execute fully efficiently and satisfactorily the order for _____ _____ Work Order no. , _____dated _____

(3) WE _____ further agree that the guarantee herein contained shall remain in full force and effect during the period that would be taken for the performance of the said order as laid down in the said Work Order No. _____ dated _____ including the warranty obligations and that it shall continue to be enforceable till all the dues of the Purchaser under or by virtue of the said Work Order No. _____ dated _____ have been fully paid and its claims satisfied or is charged or till the Purchaser or its authorized representative certified that the terms and conditions of the said Work Order No. _____ dated _____ have been fully and properly carried out by the said contractor and accordingly discharged the guarantee.

(4) We _____ the Guarantor undertake to extend the validity of Bank Guarantee at the request of the contractor for further period of periods from time to time beyond its present validity period failing which we shall pay the Purchaser the amount of Guarantee.

(5) The liability under the Guarantee is restricted to Rs. _____ (Rupees _____

_____) only and will expire on _____ and unless a claim in writing is presented to us or an action or suit to enforce the claim is filled against us within 6 months from _____ all your rights will be forfeited and we shall be relieved of and discharged from all our liabilities (thereinafter)

(6) The Guarantee herein contained shall not be determined or affected by liquidation or winding up or insolvency or closer of the Contractor.

(7) The executants has the power to issue this guarantee on behalf of Guarantor and holds full and valid power of Attorney granted in his favour by the Guarantor authorizing him to execute the Guarantee.

(8) Notwithstanding anything contained herein above, our liability under this guarantee is restricted to Rs. _____ (Rupees _____) only and our guarantee shall remain in force up to _____ and unless a demand or claim under the guarantee is made on us in writing on or before _____ all your rights under the guarantee shall be forfeited and we shall be relieved and discharged from all liabilities there under.

WE, _____ lastly undertake not to revoke this guarantee during the currency except with the previous consent of the Purchaser in writing. In witness whereof we _____have set and subscribed our hand on this _____ day of _____.

SIGNED, SEALED AND DELIVERED

_____
(Stamp of the executants)

WITNESS

1) _____

2) _____
(Name & address in full with Rubber Stamp)

WEBEL TECHNOLOGY LIMITED

INSTRUCTIONS FOR FURNISHING BANK GUARANTEE

1. Bank Guarantee (B.G.) for Advance payment, Mobilization Advance, B.G. for security Deposit-cum-Performance Guarantee, Earnest Money should be executed on the Non-Judicial Stamp paper of the applicable value and to be purchased in the name of the Bank.
2. The Executor (Bank authorities) may mention the Power of Attorney No. and date of execution in his/her favour with authorization to sign the documents. The Power of Attorney is to be witnessed by two persons mentioning their full name and address.
3. The B.G. should be executed by a Nationalised Bank/ Scheduled Commercial Bank preferably on a branch located in Kolkata. B.G. from Co-operative Bank / Rural Banks is not acceptable.
4. A Confirmation Letter of the concerned Bank must be furnished as a proof of genuineness of the Guarantee issued by them.
5. Any B.G. if executed on Non-Judicial Stamp paper after 6 (six) months of the purchase of such stamp shall be treated as Non-valid.
6. Each page of the B.G. must bear signature and seal of the Bank and B.G. Number.
7. The content of the B.G. shall be strictly as Proforma prescribed by WTL in line with Purchase Order /LOI/ Work Order etc. and must contain all factual details.
8. Any correction, deletion etc. in the B.G. should be authenticated by the Bank Officials signing the B.G.
9. In case of extension of a Contract the validity of the B.G. must be extended accordingly.
10. B.G. must be furnished within the stipulated period as mentioned in Purchase Order / LOI / Work Order etc.
11. Issuing Bank / The Bidder are requested to mention the Purchase Order / Contract / Work Order reference along with the B.G. No. For making any future queries to WTL.

WEBEL TECHNOLOGY LIMITED

SECTION – P

NIT DECLARATION

(Bidders are requested to furnish the Format given in this section, filling the entire Blank and to be submitted on Bidder's Letter Head)

To
Webel Technology Limited
Plot – 5, Block – BP, Sector - V, Salt Lake City,
Kolkata – 700091.

Sub: Supply, Installation, Commissioning and Maintenance of integrated City Command and Control system for NKGSCCL.

Dear Sir,

We the undersigned bidder/(s) declare that we have read and examined in details the specifications and other documents of the subject Tender no. WTL/NKGS/ICCC/20-21/013 dated 18.12.2020 for Supply, Installation, Commissioning and Maintenance of integrated City Command and Control system for NKGSCCL published by Webel Technology Limited in e-Tender website.

We further declare that we have agreed and accepted all the clauses / sub-clauses / formats / terms & conditions other requirements related to the said tender and we will abide by the same as mentioned in the tender document while participating and executing the said tender.

Thanking you, we remain

Yours faithfully

.....
Signature

.....
Name in full

.....
Designation

.....
Company Stamp

Dated, this .....day of 2020

WEBEL TECHNOLOGY LIMITED

SECTION – Q

MANUFACTURER'S AUTHORIZATION FORM

Date:

To
Webel Technology limited
Plot-5, Block-BP, Sector-V
Salt Lake
Kolkata-700 091

Ref: Tender No.: WTL/NKGS/ICCC/20-21/013 dated 18.12.2020.

WHEREAS _____ who are official producers of _____ and having production facilities at _____ do hereby authorize _____ located at _____ (hereinafter, the "Bidder") to submit a bid of the following Products produced by us, for the Supply Requirements associated with the above Invitation for Bids.

When resold by _____, these products are subject to our applicable standard end user warranty terms.

We assure you that in the event of _____, not being able to fulfill its obligation as our Service Provider in respect of Warranty Terms we would continue to meet our Warranty Terms through alternate arrangements.

We also confirm that _____is our authorized service provider/system integrator and can hence provide maintenance and upgrade support for our products.

We also confirm that the products quoted are on our current product list and are not likely to be discontinued within 5 years from the day of this letter. We assure availability of spares for the products for the next two years after three years warranty.

We also confirm that the material will be delivered as mentioned in tender documents.

Name In the capacity of

Signed

Duly authorized to sign the authorization for and on behalf of _____

Dated on _____ day of_____2021

Note: This letter of authority must be on the letterhead of the Manufacturer and duly signed by an authorized signatory.

WEBEL TECHNOLOGY LIMITED

SECTION – R

FORMAT OF BANK GUARANTEE FOR EMD

Form of Bid Security
(Bank Guarantee)

Bank Guarantee No……. Date…….

WHEREAS,……..(name & address) (hereinafter called "the Applicant") has submitted his Bid dated _____ [date] or will submit his Bid for execution of _____ [name of Contract] (hereinafter called "the Bid") under Request for Bids No…… [insert number] (hereinafter called "the RFB")

KNOW ALL PEOPLE by these presents that We _____ [name of bank] of _____ [name of country] having our registered office at _____ (hereinafter called "the Bank") are bound unto _____[name of Employer] (hereinafter called "the Employer") in the sum of _____ for which payment will and truly to be made to the said Employer the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said Bank this _____ day of _____ 20____.

THE CONDITIONS of this obligation are:

(1) If after Bid opening the Applicant (a) withdraws his bid during the period of Bid validity specified in the Letter of Bid, ("the Bid Validity Period"); or (b) does not accept the correction of the Bid Price pursuant to ITB 36;

or

(2) If the Applicant having been notified of the acceptance of his bid by the Employer during the period of Bid validity:

(a) fails or refuses to execute the Contract Agreement in accordance with the Instructions to Bidders, if required; or

(b) fails or refuses to furnish the Performance Security, in accordance with the Instruction to Bidders.
we undertake to pay to the Employer up to the above amount upon receipt of his first written demand, without the Employer having to substantiate his demand, provided that in his demand the Employer will note that the amount claimed by him is due to him owing to the occurrence of one or any of the four conditions, specifying the occurred condition or conditions.

This Guarantee will remain in force up to and including the date _____30 days after the deadline for submission of Bids as such deadline is stated in the Instructions to Bidders or as it may be extended by the Employer, notice of which extension(s) to the Bank is hereby waived. Any demand in respect of this guarantee should reach the Bank not later than the above date.

DATE _____ SIGNATURE OF THE BANK _____

WITNESS _____ SEAL _____

_____
[signature, name, and address]

Annexure - I

Continuation of Section - I

Technical Requirements for ICCC: IT Components

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
1. General			
ICCC/TR/1.01	Space Upgradation & Work	Approximate space of around 4000 sq.ft is proposed for the development of the Permanent Integrated Command and Control Centre. The proposed layout comprises of ICCC building with G floor construction. Following components are proposed to be part of the ICCC building: - Video Hall - Situation Room - Teleconference Room - Meeting Room - Cabins - Training Room - HelpDesk - Data Centre - Waiting Area - Any other area as appropriate A Command and Control Centre shall be implemented in an area of approx. 4000 sq. ft. (including 500 sq.ft. for Data Centre) equipped with all hardware equipment's and software (as per the BOM) for monitoring and management of all smart solutions till the permanent ICCC is not ready for operations. Further, the furniture and fixture at the command and control centre shall be in proportion to the area provided for the centre. MSI shall be	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		responsible for complete installation of command and control centre, which also includes all civil, mechanical, electrical and interior works. MSI shall also be responsible for Facility Management at command and control centre, which includes but not limited to building and grounds maintenance, cleaning, security, space management, utilities management etc.	
2. Video Display Wall			
ICCC/TR/2.01	Overview Display	The displays shall utilize direct LED lit LCD panel technology with a matrix of 18 (C) x 2 ® in curved configuration	
ICCC/TR/2.02	Display Unit	The native resolution of each Visual Display Unit / Rear Projection Module should be 1920 X 1080 pixels (Full HD) and should have LED as its light source	
ICCC/TR/2.03	Screen Size	Each cube size to be 55" (55 Inches diagonally) or more with complete. All cubes have to be of the exactly same size, configuration and model wise mandatorily. The wall to be installed in curved fashion with all required support system like Controller / stand for DLP Cubes / Interfaces / Connecting cables.	
ICCC/TR/2.04	Resolution	The native resolution of each Visual Display Unit / Rear Projection Module should be 1920 X 1080 pixels (Full HD) and should have LED as its light source.	

ICCC/TR/2.05	Aspect Ratio	16:9	
ICCC/TR/2.06	Brightness	The "Typical" Luminance specification must be minimum 500 Cd/m2 (nits) or higher	
ICCC/TR/2.07	Contrast Ratio	Dynamic contrast should be 1,200,000:1 or better	
ICCC/TR/2.08	Wall Uptime	The light source lifetime of the LED shall be min 60000h Economy usage mode	
ICCC/TR/2.10	Screen to Screen gap	The inter screen gap (bezel gap) should be <1 mm.	
ICCC/TR/2.11	Input	Analog D-sub/Ethernet/Digital DVI/Digital HDMI (as per solution)	
ICCC/TR/2.12	Operating Temperature	The VDW shall have an operational temperature between ten degrees Celsius (As per City condition and requirement) to thirty degrees Celsius (As per City condition and requirement).	
ICCC/TR/2.13	Relative Humidity conditions for operation	The VDW shall have a relative humidity of 20% to 80%, noncondensing or better.	
ICCC/TR/2.14	Power	The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz. Power consumption of each cube shall be less than 350W.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/2.15	Warranty	5 Years	
ICCC/TR/2.16	Others	• ACM Support(Advanced Color Management), Auto Source Switching & Recovery, Temperature Sensor, RS232C/RJ45 MDC,Plug and Play (DDC2B), Video Wall(15x15(OSD)), Video Wall Daisy Chain(10x10), Pivot Display, Image Rotation, Button Lock, DP 1.2 Digital Daisy Chain(Supporting UHD Resolution, HDCP support), Smart F/W update, Clock Battery(168hrs Clock Keeping) IP5X tested • Each LCD panel shall be equipped with built-in sensors, permitting the brightness level of each LED Backlight to be controlled and adjusted automatically. No brightness adjustment via remote as its manual in nature is required.	
3. Video Wall Controller			
ICCC/TR/3.01	Controller	Controller to control Video wall in a matrix as per requirement along with software	
ICCC/TR/3.02	Chassis	19" Rack mount	
ICCC/TR/3.03	Processor	Latest Generation 64 bit x86 Quad Core processor (3.4 Ghz) or better	
ICCC/TR/3.04	Operating System	Pre-loaded 64-bit Operating System Windows / Linux / Equivalent, with recovery disc	
ICCC/TR/3.05	RAM	16 GB DDR3 ECC RAM	
ICCC/TR/3.06	HDD	2x500 GB 7200 RPM HDD (Configured in RAID 0)	
ICCC/TR/3.07	Networking	Dual-port Gigabit Ethernet Controller with RJ-45 ports	
ICCC/TR/3.08	RAID	RAID 0, 1, 5 or better	
ICCC/TR/3.09	Power Supply	(1+1) Redundant hot swappable	
ICCC/TR/3.10	Input/Output Support	DVI/HDMI/USB/ LAN/ VGA/SATA port	
ICCC/TR/3.11	Accessories	104 key Keyboard and Optical USB mouse	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/3.12	USB Ports	Minimum 4 USB Ports	

ICCC/TR/3.13	Redundancy Support	Power Supply, HDD, LAN port & Controller	
ICCC/TR/3.14	Scalability & Features	Should support at least 16 input sources in the form of HDMI, RTSP, IP based.	
ICCC/TR/3.15	Control functions	Brightness/ Contrast/ Saturation/ Hue/ Filtering/ Crop/ Rotate	
ICCC/TR/3.16	Inputs	To connect to minimum 16 sources, through HDMI/DVI/LAN	
ICCC/TR/3.17	Output	To connect to minimum 44 displays, through HDMI/DVI/LAN	
ICCC/TR/3.18	Operating Temperature	As per City location	
ICCC/TR/3.19	Cable & Connections	Successful bidder should provide all the necessary cables and connectors, so as to connect Controller with LED Display units	
4. Video Wall Management Software			
ICCC/TR/4.01	Display & Scaling	Display multiple sources anywhere on display up to any size	
ICCC/TR/4.02	Input Management	All input sources can be displayed on the video wall in freely resizable and movable windows	
ICCC/TR/4.03	Scenarios management	Save and load desktop layouts from local or remote machines	
ICCC/TR/4.04	Layout Management	Support all layout from input sources, Internet Explorer, desktop and remote desktop application	
ICCC/TR/4.05	Multi View Option	Multiple view of portions or regions of Desktop, multiple application can view from single desktop Ability to display multiple sources anywhere on video display wall (VDW) in any size Ability to stretch, re-position, and resize any video source on any display device Ability to treat the VDW as a single display. It shall act as a single canvas with no pixel separation The system should be controlled over the network. The system should have an easy to access Mobile and Desktop dashboard to be able to arrange multiple sources. The system should be able to support a lossless synchronized audio-video transfer between source and output. The same shall have no visual lagging. Should support: - - Zones, P-in-P, multi-window - Supervisory dashboard - Interactive viewer - Desktop Streaming - Source name overlays - Pre-set and save layouts - Network-wide broadcast - API Access - Cloud and off-line scheduling - Automatic cloud service updates - Cloud based server backup and restore - Command and Control overlay to drag, drop and resize content windows in real-time - Role Based Access Control - LDAP and SAML authentication	
ICCC/TR/4.06	Other Features	SMTP support	
ICCC/TR/4.07		Remote Control over LAN	
ICCC/TR/4.08		Alarm management	
ICCC/TR/4.09		Remote management	

ICCC/TR/4.10		Multiple concurrent client	
ICCC/TR/4.11		KVM support	
ICCC/TR/4.12	Cube Management	Cube Health Monitoring	
ICCC/TR/4.13		Pop-Up Alert Service	
ICCC/TR/4.14		Graphical User Interface	
ICCC/TR/4.15		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	
ICCC/TR/4.16		Fine-tune colour of each cube	
5. Monitoring Workstations			
ICCC/TR/5.01	Processor	Latest generation 64bit X86 Quad core processor(3Ghz) / intel i7 or better	
ICCC/TR/5.02	Chipset	Latest series 64bit Chipset	
ICCC/TR/5.03	Motherboard	OEM Motherboard	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/5.04	RAM	Minimum 16 GB DDR4 ECC Memory @ 1600 Mhz. Slots should be free for future upgrade. Minimum 4 DIMM slots, supporting up to 32GB ECC	
ICCC/TR/5.05	Graphics card	Minimum Graphics card with 2 GB video memory (non- shared)	
ICCC/TR/5.06	HDD	Minimum 2 TB SATA-3 or latest Hard drive @7200 rpm with Flash Cache of 256GB SSD. Provision for installing 4 more drives.	
ICCC/TR/5.07	Media Drive	No CD / DVD Drive	
ICCC/TR/5.08	Network interface	10/100/1000 Mbps autosensing on board integrated RJ-45 Ethernet port.	
ICCC/TR/5.09	Audio	Line/Mic IN, Line-out/Spr Out (3.5 mm)	
ICCC/TR/5.10	Ports	Minimum 6 USB ports (out of that 2 in front)	
ICCC/TR/5.11	Keyboard	104 keys minimum OEM keyboard	
ICCC/TR/5.12	Mouse	2 button optical scroll mouse (USB)	
ICCC/TR/5.13	PTZ joystick controller (with 2 of the workstations in ICCC)	• 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	
ICCC/TR/5.14	Monitor	22" TFT LED monitor, Minimum 1920 x1080 resolution, 5 ms or better response time, TCO 05 (or higher) certified	
ICCC/TR/5.15	Certification	Energy star 5.0/BEE star certified	
ICCC/TR/5.16	Operating System	64 bit pre-loaded OS with recovery disc	
ICCC/TR/5.17	Security	BIOS controlled electro-mechanical internal chassis lock for the system.	

ICCC/TR/5.18	Antivirus feature	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)	
ICCC/TR/5.19	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.	
7. Online UPS for indoor location			
ICCC/TR/7.1	Capacity	Adequate capacity to cover all above IT Components at respective location	
ICCC/TR/7.2	Output Wave Form	Pure Sine wave	
ICCC/TR/7.3	Input Power Factor at Full Load	>0.90	
ICCC/TR/7.4	Input	Three Phase 3 Wire for over 15 KVA	
ICCC/TR/7.5	Input Voltage Range	305-475VAC at	
		Full Load	
ICCC/TR/7.6	Input Frequency	50Hz +/- 3 Hz	
ICCC/TR/7.7	Output Voltage	400V AC, Three Phase for over 15 KVA UPS	
ICCC/TR/7.8	Output Frequency	50Hz+/- 0.5%	
ICCC/TR/7.9		(Free running);	
ICCC/TR/7.10		+/- 3% (Sync. Mode)	
ICCC/TR/7.11	Inverter efficiency	>90%	
ICCC/TR/7.12	Over All AC-AC Efficiency	>85%	
ICCC/TR/7.13	UPS shutdown	UPS should shutdown with an alarm and indication on following conditions 1)Output over voltage 2)Output under voltage 3)Battery low 4)Inverter overload 5)Over temperature 6)Output short	
ICCC/TR/7.14	Battery Backup	24 hours in full load	
ICCC/TR/7.15	Battery	VRLA (Valve Regulated Lead Acid) SMF (Sealed Maintenance Free) Battery	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/7.16	Indicators & Metering	Indicators for AC Mains, Load on Battery, Fault, Load Level, Battery Low Warning, Inverter On, UPS on Bypass, Overload, etc.	
		Metering for Input Voltage, Output Voltage and frequency, battery voltage, output current etc.	
ICCC/TR/7.17	Audio Alarm	Battery low, Mains Failure, Over temperature, Inverter overload, Fault etc.	

ICCC/TR/7.18	Cabinet	Rack / Tower type	
ICCC/TR/7.19	Operating Temp	0 to 50 degrees centigrade	
ICCC/TR/7.20	Management Protocol	SNMP Support through TCP/IP	
8. Desktop			
ICCC/TR/8.1	Make	Must be specified	
ICCC/TR/8.2	Model	Must be specified	
ICCC/TR/8.3	Processor	Intel Core i7-latest generation (3.0 Ghz) or higher OR AMD A10 7850B (3.0 Ghz) processor or higher OR Equivalent 64 bit x86 processor	
ICCC/TR/8.4	Memory	Minimum of 8 GB DDR4 RAM @ 2400 MHz. One DIMM Slot should be free for future upgrade	
ICCC/TR/8.5	Motherboard	OEM Motherboard	
ICCC/TR/8.6	Hard Disk Drive	Minimum 500 GB SATA III Hard Disk @7200 RPM or higher	
ICCC/TR/8.7	Audio	Line/Mic In, Line-out/Speaker Out (3.5 mm)	
ICCC/TR/8.8	Network port	10/100/1000 Mbps auto-sensing on-board integrated RJ-45 Ethernet Port	
ICCC/TR/8.9	Wireless Connectivity	Wireless LAN - 802.11b/g/n/	
ICCC/TR/8.10	USB Ports	Minimum 4 USB ports (out of that 2 should be in front)	
ICCC/TR/8.11	Display Port	1 Display Port (HDMI/VGA) port	
ICCC/TR/8.12	Power supply	Maximum Rating 250 Watts, 80 plus certified power supply	
ICCC/TR/8.13	Keyboard	104 keys Heavy Duty Mechanical Switch Keyboard (USB Interface) with 50 million keystrokes life per switch. Rupee Symbol to be engraved.	
ICCC/TR/8.14	Mouse	Optical with USB interface (same make as desktop)	
ICCC/TR/8.15	Monitor	Minimum 18.5" diagonal LED Monitor with 1366x768 or higher resolution. (Same make as desktop). Should be TCO05 certified	
ICCC/TR/8.16	Operating System and Support	Pre-loaded appropriate 64 bit operating system with latest Windows / Linux Professional 64 bit, licensed copy with certificate of authenticity (or equivalent authenticity information) and all necessary and latest patches and updates. Can be downgraded to lower version like Windows Professional (64 bit) or Linux as applicable. All Utilities and driver software, bundled in CD/DVD/Pen-drive media	
ICCC/TR/8.17	Certification for Desktop	Energy Star 5.0 or above / BEE star certified	
ICCC/TR/8.18	Other pre-loaded software (open source/ free)	Latest version of Libreoffice, Latest version of Adobe Acrobat Reader, Scanning Software (as per scanner offered). These software shall be preloaded (at the facility of OEM or any other location) before shipment to Authority offices/locations.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
9. Laptop			
ICCC/TR/9.1	Make	Must be specified	
ICCC/TR/9.2	Model	Must be specified	
ICCC/TR/9.3	Processor	Intel Core i7 with latest generation or higher (OR) AMD A10 PRO 7300 (1.9Ghz) Processor or higher (OR) Equivalent 64 bit x86 processor	
ICCC/TR/9.4	Display	Minimum 15" Diagonal TFT Widescreen with minimum 1920x1080 resolution (16:9 ratio)	
ICCC/TR/9.5	Memory	16 GB DDR3 RAM @ should be free for future upgrade	
ICCC/TR/9.6	Hard Disk Drive	Minimum 500 GB SATA SSD @ 5400 rpm	
ICCC/TR/9.7	Ports	• 3 USB Ports • 1- Gigabit LAN (RJ 45); • 1- HDMI/Display port, • 1- VGA, • 1- headphone/Microphone;	
ICCC/TR/9.8	Web Camera	Built in web cam	
ICCC/TR/9.9	Wireless Connectivity	Wireless LAN - 802.11b/g/n/ Bluetooth 3.0	
ICCC/TR/9.10	Audio	Built-in Speakers	
ICCC/TR/9.11	Battery backup	Minimum 40 WHr lithium ion or lithium polymer battery with a backup of minimum 4 hours	
ICCC/TR/9.12	Keyboard and Mouse	84 keys compatible keyboard, integrated Touch Pad.	
ICCC/TR/9.13	Operating System	Pre-loaded latest Windows/Linux Professional 64 bit, licensed copy with certificate of authenticity (or equivalent authenticity information) and all necessary and latest patches and updates. Can be downgraded to Windows/Linux (64 bit). All Utilities and driver software, bundled in CD/DVD/Pen-drive media	
ICCC/TR/9.14	Certification	Energy Star 5.0 or above / BEE star certified	
ICCC/TR/9.15	Weight	Laptop with battery (without DVD) should not weigh more than 2 Kg	
ICCC/TR/9.16	Accessories	Laptop carrying Back-pack. It should be from same OEM as laptop	
ICCC/TR/9.17	Other pre-loaded software (open source/ free)	• Latest version of Libre-office, Latest version of Adobe Acrobat Reader. • Scanning Software (as per scanner offered), this software shall be pre-loaded (at the facility of OEM or any other location) before shipment to Authority offices/locations.	
10. Network colour Laser Multi-Function Printer			
ICCC/TR/10.1	Make	Must be specified	

ICCC/TR/10.2	Model	Must be specified	
ICCC/TR/10.3	Print Speed	Black : 15 ppm or above on A3, 24 ppm or above on A4	
ICCC/TR/10.4		Color : 8 ppm or above on A3, 12 ppm or above on A4	
ICCC/TR/10.5	Resolution	600 X 600 DPI	
ICCC/TR/10.6	Memory	Min. 8 MB or more	
ICCC/TR/10.7	Paper Size	A3, A4, Legal, Letter, Executive, custom sizes	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/10.8	Paper Capacity	250 sheets or above on standard input tray, 100 Sheet or above on Output Tray	
ICCC/TR/10.9	Duty Cycle	25,000 sheets or better per month	
ICCC/TR/10.10	OS Support	latest Windows/Linux	
ICCC/TR/10.11	Scanning & Faxing	A3, A4, Legal, Letter, Executive Scan & Fax option with Automatic Document Feeder	
ICCC/TR/10.12	Interface	Ethernet Interface	
11. Fixed Dome Camera for Indoor Surveillance			
ICCC/TR/11.1	Video Compression	H.264, H.265/MJPEG/ MPEG-4 or better	
ICCC/TR/11.2	Video Resolution	1920 X 1080	
ICCC/TR/11.3	Frame rate	Min. 25 fps	
ICCC/TR/11.4	Image Sensor	1/3" Progressive Scan CCD / CMOS	
ICCC/TR/11.5	Lens Type	Varifocal, C/CS Mount or equivalent, with IR Correction Full HD lens compatible to camera imager	
ICCC/TR/11.6	Lens#	Auto IRIS 2.8-10mm	
ICCC/TR/11.7	Multiple Streams	Dual streaming with 2nd stream at minimum 720P at 30fps at H.264, H.265 individually configurable	
ICCC/TR/11.8	Minimum Illumination	Colour: 0.1 lux, B/W: 0.01 lux (at 30 IRE)	
ICCC/TR/11.9	IR Cut Filter	Automatically Removable IR-cut filter	
ICCC/TR/11.10	Day/Night Mode	Colour, Mono, Auto	
ICCC/TR/11.11	S/N Ratio	≥ 50 dB	
ICCC/TR/11.12	Auto adjustment + Remote Control of Image settings	Color, brightness, sharpness, contrast, white balance, exposure control, backlight compensation, Gain Control	
ICCC/TR/11.13	Wide Dynamic Range	True WDR up to 80 db	
ICCC/TR/11.14	Audio	Full duplex, line in and line out, G.711, G.726	

ICCC/TR/11.15	Local storage	MicroSDXC up to 32GB (Class 10) In the event of failure of connectivity to the central server the camera shall record video locally on the SD card automatically. After the connectivity is restored these recordings shall be automatically merged with the server recording such that no manual intervention is required to transfer the SD card based recordings to server.	
ICCC/TR/11.16	Protocol	HTTP, HTTPS, FTP, RTSP, RTP, TCP, UDP, RTCP, DHCP, ONVIF, Profile S&G	
ICCC/TR/11.17	Security	Password Protection, IP Address filtering, User Access Log, HTTPS encryption	
ICCC/TR/11.18	Intelligent Video	Motion Detection & Tampering alert	
ICCC/TR/11.19	Alarm I/O	Minimum 1 Input & Output contact for 3rd part interface	
ICCC/TR/11.20	Operating conditions	0 to 50°C (As per City requirement)	
ICCC/TR/11.21	Casing	NEMA 4X / IP-66 rated & IK 09	
ICCC/TR/11.22	Certification	UL2802 / EN, CE ,FCC	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/11.23	Power	802.3 PoE (Class 0) and 12VDC/24AC	
12. Video Conferencing Unit			

ICCC/TR/12.1	General	• The multipoint function be done using a common server running VMware based Appliance Virtualization Platform and support H.323 and SIP optionally supporting H.263 , H.264, H.265 , H.264, H.265 High Profile and H.264, H.265 SVC • The Multipoint Conference Server should support Advance Video Coding format when connecting to end points and should retain the same layout and CP options of minimum 15 CP on the display unit. • All components of the solution – the multipoint conference server and software, Management software, Scheduling, web access desktop client software, web collaboration plug and WebRTC client should be from the same OEM. • In a multipoint conference server support symmetric 1080p30 conferences should be available on day one. • The multipoint conference server should support be a Full high definition and should support 1080p30, 720p30 and 480p30 resolutions in continuous presence mode using H.264, H.265 and H.264, H.265 SVC. • The capacity of the multipoint conference the number of ports should be 30 ports@720p30 or 15ports@1080p30 and upgradable to 40ports@720p30 and 80ports@480p30 in the same server. • Features should be uniform across protocols used H.264, H.265 AVC, H.264, H.265 SVC and H.264, H.265 Hi Profile.	
ICCC/TR/12.2	Video multipoint feature	• For security during a multipoint conference, standard ITU protocol - H.235 standard AES encryption without impacting port capacity. • Each participant should support a video layout of their own choice • The Video infrastructure should support H.239 standard for sending/receiving multiple streams of video and presentation content. The H.239 support should not cost additional conference ports supporting 1080p30 for presentation and should allow web collaboration plug in for annotation and white boarding and application sharing. • The Multipoint conference infrastructure should support unlimited conferences as per the capacity of the Video Infrastructure as per the resolution selected – 1080p30 , 720p30 and 480p30	

ICCC/TR/12.3	Video Multipoint Infrastructure	In a Multipoint conference server the number of Continuous Presence participants that are seen	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		should be 15 with aspect ratios of 16:19 should supported from 480p30 resolution onwards. • The capacity of the number of 480p 30 ports should be to four times the number of 1080p30 ports • The video infrastructure should support transcoding at 1080p30, 72030 and 480p30.	
ICCC/TR/12.4	Conference Management	• The management capacity supported should expandable in the future to increase concurrent calls. • The Management should support 80 concurrent calls and 400 registrations.	
ICCC/TR/12.5	Audio Protocol	Should Support AAC-LC, Opus, Siren14/G.722.1 Annex C, G.722, G.722.1, G.729, G.711.	
ICCC/TR/12.6	Video Protocol	Should Support H.263, H.264, H.265, H.264, H.265 Hi-Profile, VP8.	
ICCC/TR/12.7	Main Video Resolution	Should Support CIF, 4CIF, 240p, 352p, 480p, 720p, and 1080p.	
ICCC/TR/12.8	Presentation Video Resolution	Should Support CIF, VGA and 1080p and frame rates of 30fps	
ICCC/TR/12.9	Security	• H.235 AES encryption for secure conferencing • PIN protected conferences • HTTPS • The Management tool should support secure certificates. • The system should support Transport Layer Security (TLS) for secure signaling when connecting to SIP devices • The Video Infrastructure should be able to connect both H.235 and SRTP based devices in the same Multipoint conference	
ICCC/TR/12.10	Moderator Control	• The system should support H.243 Chair control functions for conference management by a terminal endpoint. • The Moderator should have the rights to conference control using functions like invite, terminate conference, take or release chair control, mute, volume control, video layout change and block or unblock admission to a conference	

ICCC/TR/12.11	Data Support	Should support H.239/Duo-Video standards for sending/receiving multiple streams of video and presentation content without losing Video infrastructure port capacity.	
ICCC/TR/12.12	Video CP Layout	The Video Infrastructure shall support video processing capabilities that allow each site to see other sites simultaneously with continuous presence in dynamically layouts.	
ICCC/TR/12.13	Video Infrastructure Interface	The Video Infrastructure shall provide a complete 'conference control' interface browser to support all 'in call' management functions with drag and drop' manipulation of parties in the call and within screen layouts.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/12.14	Conference Management software	• Through Management load balancing and call routing rules the Video Infrastructure should support scaling to larger installations • Shall include a software based H.323 Management function. • Shall support advanced bandwidth management for calls between Management sub-zones and remote zones to ensure proper call access control to the TCP/IP network for H.323 calls. • Shall support H.450 Call Forward and Transfer Supplementary Services. • Shall support call forwarding options including: unconditional forwarding, forward - busy and forward - no answer, and forward when not registered. • Shall support real time monitoring • Shall support advanced call fall back to ensure call completion rates.	

ICCC/TR/12.15	Conference scheduling	• Scheduling Capacity: Minimum 80 concurrent calls • Should support Microsoft/Linux/Unix scheduling with email notifications to individual participants and web collaboration. • Should be provided in order to control all system resources, reserve conferences, and provide ongoing conference, point to point call, and fault management functions, through Web portal • Should be able to send e- mail notification to all participants. • The Web based application portal should implement single sign-on, wherein the enterprise Directory is accessed for pass-through authentication from the Web based application portal. • The conference scheduling application should support Direct Inward Dial to scheduled meetings. • The conference scheduling application should be able to manipulate conference layouts via a "drag and drop" Web user interface at scheduling time or in real time when conferences are in session • The conference scheduling application should support intelligent and optimized real time resource allocation algorithm for Multipoint ports on the Video Infrastructure and dynamically reuse the allocated ports according to the actual terminal capabilities. • The conference scheduling application should support Lecture style conferences where the lecturer sees students in a continuous presence layout, and the students all see the lecturer in a single screen layout.	
ICCC/TR/12.16	Reports	The conferencing application should provide a reporting and statistics support which will enable the system administration generate the following graphical charts / reports:	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		• Number of Multipoint calls records for the entire deployment • Number of Point to Point calls records for the entire deployment Calls Records per terminal • Number of gateway calls for the deployment • Number of Desktop calls • Multipoint calls records per specific Virtual Room.	
ICCC/TR/12.17	Availability	The conference scheduling application and network management application should support redundant deployment for high availability in case required.	

ICCC/TR/12.18	Other Features	• The conference scheduling system admin should have the ability to provision the following attributes per user / groups of users: - Time zone, Level of Video/Audio Services (HD, SD, Audio Only), - Location Preference in a distributed deployment, - Recording Policy, if recording server implemented. - Maximum Allowed Bandwidth for calls. - Maximum allowed participants per virtual room. • The Scheduling Application should support corporate address book. • The conference scheduling application should support management, load balancing and resource reservation of multiple distributed Video Infrastructure Gateways and Gatekeepers. • The conference scheduling application should support Dial-in or Video Infrastructure auto-Invite (Dial-out) to terminals. • Both the Management and the Scheduling and Network Management software should be installed on single server.	
ICCC/TR/12.19	Desktop Conferencing	• Minimum 1000 web access client download / WebRTC clients for Laptops and 1000 clients for mobile devices. • Desktop connectivity to PCs /laptops through desk top client installed and be able to participate in an ongoing conference using PC web camera and audio facilities and devices like Apple iPad , IPhone and Android phones. • The solution provided should support email exchange. This desktop clients on the PC should be able to initiate H.239 data collaboration and participate or View video and H.239 with support for annotation over H.239 • The desktop client should control the remote camera when required. • Desktop PC users should be able to connect behind firewalls with configuration. • Desktop PC users should be able to conference controls like lock meeting, terminate meeting, invite	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)

		participant, mute/un-mute, disconnect any participant. • The Desktop client should support Waiting room and Virtual room with support for full screen video on the desktop. • It shall be possible to receive resolutions of 1080p on desktop clients. • Each Desktop Client participant should have the ability to change between voice activated video switching mode and continuous presence mode on the fly. • The Desktop Client user interface should provide simultaneous views of the participants and H.239 data collaboration portions of the conference. The user interface should provide full screen views of the participants or H.239 data collaboration portion of the conference. • It shall be possible to annotate over the presentation. The annotations should be sent as part of the standard H.239 stream so it is visible on all other H.239 complaint endpoints (software or hardware) connected to the conference. • The Desktop Client should include a native component that enables desktop client participants to text chat while in conference. • The Desktop Client user interface should provide a participant list showing which participants are currently connected to the conference and whether each participant can send and is sending audio, is sending video, can send/receive data and is sending data. • The desktop administrator should be able to provision a directory of room systems. This directory shall be available in the desktop client user interface to ease the process of inviting room systems. • The Desktop Client solution should be able to secure conferences via PINs/passwords. • The desktop client should support white-boarding and web collaboration. • Should natively support Zoom, Cisco Webex, Google Meet, Microsoft Teams	
13. Room Control System including Panel			
ICCC/TR/13.1	Room Control System including Panel	The boardroom and the operations room shall have their independent room control systems. All systems including shadowing, lighting, HVAC, audio etc. being provided as part of the ICCC shall be integrated using this room control panel.	
ICCC/TR/13.2		The room control systems shall support a minimum of 7" touch panel display.	
ICCC/TR/13.3		The touch panel displays shall support a resolution of 1920 x 1080.	

ICCC/TR/13.4		The touch panel displays shall be desk mount with a cradle.	
ICCC/TR/13.5		The touch panel displays shall be wireless.	
ICCC/TR/13.6		The touch panel interfaces shall be intuitive and easy to use.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/13.7		The touch panel displays shall support full battery operations.	
ICCC/TR/13.8		The touch panel displays shall support full motion video preview and monitoring.	
ICCC/TR/13.9		The room control processors shall support secure industry standard communication protocol.	
ICCC/TR/13.10		The room control processors shall support the required number of ports for connection with variety of device following contract documents.	
ICCC/TR/13.11		The room control processors shall support 10/100/1000 Base-T.	
ICCC/TR/13.12		The room control processors shall support Ethernet controllable devices.	
ICCC/TR/13.13		The room control processors shall support automatic clock synchronization.	
ICCC/TR/13.14		The room control panels shall support control system synchronization.	
ICCC/TR/13.15		The room control panels shall support multi-level password protection.	
ICCC/TR/13.16		The room control panels shall support an easy to use browser based user interface.	
ICCC/TR/13.17		The room control system hardware shall be rack mountable.	
ICCC/TR/13.18		The room control systems shall integrate with other non-AV systems in the room. This includes and not limited to window coverings and lights in both the operations room and boardroom.	
ICCC/TR/13.19		The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz.	
ICCC/TR/13.20		The room control system shall be operable between 0 and +40 °C / 10% to 85%, non-condensing.	
14. EPABX System			

ICCC/TR/14.1	EPABX System	• The EPABX should have facility to accept at least 10 PRIs and should scale up to 1000 extensions to support the mix of analogue, digital and IP phones. • Server based IP-PBX - IPPBX (Hardware & Software) shall be provided in high availability configuration. - The system should support IP or SIP as well as TDM. The TDM can be supported through an external Gateway. • Communication System should support Analogy, Digital, IP, SIP, phones & Wireless IP Phone. • The IP PBX should be modular, expandable, embedded IP server-gateway/server based architecture, having UNIX or Linux or equivalent operating system software based platform. • The system shall have hot standby/Active-Active arrangement so that it should continue to operate in case of failure or maintenance of main processor or power supply or interfacing card or CPU etc. The system should support IP or SIP as well as TDM. The TDM can be supported through an external Gateway. • Support for ACD Call Center with CTI and advance call routing • The system shall be able to provide following features like Basic Call Setup, Name and Number Support, Transit Counter, called or Calling or Busy or Connected Name and Number, Name Identification, Diversion (Call	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		forwarding),Diversion (Call forwarding) with Reroute, Call transfer. • It shall provide features as give below but not limited to these: - Call forward all, Call forward while busy, Call forward if no answer - Call hold , Call Drop and retrieve - Call Waiting and Retrieve (with configurable audible alerting) - Call Join - Call status (state, duration, number) - Conference for at least 5 parties - Missed call information on IP phone - Directory dial from phone - Hands-free, speakerphone - Last number redial - Malicious Call ID and Trace - Abbreviated Dial, Speed Dial	

ICCC/TR/14.2		ACD (Automatic Call Distribution) The key ACD features includes ANI/DNIS routing, managing multiple queues, welcome greeting messages, office hours configuration, standard and user defined reports, remote agent login, skill based routing, wait time notification, routing in incoming emails and web chat requests and integration with CRM, ticketing systems & voice logger ● ACD (Hardware & Software) shall be provided in high availability configuration. ● System should support skill base routing, multiple group support, priority handling and Queue status indicator. It is desirable that calls to certain trunk groups or to certain dialed numbers be assigned a higher priority than other calls and that calls which overflow from another split be queued ahead of other calls. ● The system should support call overflow routing e.g. if there is a queue in particular ACD group and another group is sitting idle, system should be able to transfer the calls to another group based on the settings defined by the administrator. ● The ACD should support help or assist on Officer's phone. Officer can use this functionality to request help from the split supervisor. This functionality automatically dials the split supervisor's extension and connects the Officer to the supervisor. Current call should go on hold as the Officer use this functionality. ● The proposed system should support the concept of virtual seating. Officers can log-on from any "soft phone" instrument within the system. Officers on the proposed system will be logically defined, rather than requiring a "soft phone" extension and termination. Each Officer on the system should have an individually assigned log- on identification number which permits individual statistics to be collected by the ACD management information system.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)

		● Automatic call distributor device should have capability to distribute the calls based on Skill level of the Officer like efficiency of the Officer and work load. ● Automatic call distributor device should have functionality to provide best service to the caller like listen only, listen and talk only etc. ● All calls for each ACD group (Skilled or Hunt) should be redirected to a different extension after hours. Supervisors should be able to activate this from their voice terminal. Each group may have different hours of operation. ● Automatic call distributor device should provide alternate routing automatically based upon time of day and day of week. ● Both Officers and supervisors should be notified via the telephone indicators when thresholds are reached for individuals and groups. ● Calls can be queue to an individual Officer. Officer should be notified and a delay announcement be provided if the call queues for an individual Officer who is on another call. ● Automatic call distributor device should support to force the Officers to be put into an ACW (After call work) state for a predefined period of time in order to provide rest time between calls, pace calls to the Officers, or limit the amount of time an Officer spends in completing wrap-up work. ● Automatic call distributor device should be capable to define certain Officers as "reserve" Officers for certain skill sets which shall be able to handle call if configured incoming call threshold is exceeded. ● ACD should be able to block nuisance callers against list of numbers captured in master database until either numbers is removed from the master database of nuisance callers. ● In case of non-emergency, ACD System should allow auto transfer of calls to voice based feedback application which shall captures user's feedback on multiple questions using DTMF inputs. ● Automatic call distributor device should allow to change or add or remove Officer Skill dynamically while Officers are on calls. ● System should allow an automation layer with different telephony and call control Java SDK's (Restful API's) in order to integrate with any 3rd party adjunct if required. ● The system should allow non-voice communication channel like email, web chat and SMS to be routed to Non-voice Officer based on skill set and Officer Availability. ● The System should allow Social Media Posts (from Facebook, Twitter) to be routed to non-voice officers as email and officer should be able to reply back which gets posted back on citizens' s Facebook / twitter message window.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		● System should automatically inform the contact (via email) that their email has been received. ● System should be capable to distribute mails based on keywords in the subject or the body of the emails. Different rules can be used to route the mail to the right Officer or queue. ● The Web chat solution is required for users that prefer web chat as a medium to communicate with the Officer. ● An administrator should be able to configure the standard chat messages that will be presented during establishment of a chat session. The proposed solution is required for the users that prefer SMS as a medium.	

ICCC/TR/14.3		Self-Service IVR (Level-3 voice & text messaging) ● IVR should have self-help service with text to speech and automatic speech recognition. IVR should have flow designer with scripting capabilities, multilanguage support. Interaction with uses using email, SMS (two way), and mobile web (visual IVR), customizable IVR prompts and agent greeting facility. IVR System ● IVR should support DTMF, speech recognition and Text to speech for Indian English, Odiya and Hindi languages. ● IVR should be support VXML. CCXML and MRCP. ● IVR should be able to pass caller entered information to ACD using CTI link. ● IVR should provide standard reports and custom reports built into the application. ● IVR should be able to support SMS and mobile web channels. ● IVR should be able to interact with caller with SMS or mobile web app while caller is on voice call. ● IVR should provide graphical user interface to create call flow / applications using drag and drop controls. ● Call Logger System - Voice recording system shall be provided in high availability configuration. - The recording software should use the recording interface provided by ACD or PBX API and should provide 100% voice call recordings. - The recording software should provide a single license that can support recording on all IP Phones. - The recording software should be able to record calls coming on any type of trunk line like PRI/IP and system should also record internal calls. - The software should record inbound calls and outbound calls. - The software should support for search and replay of calls. - The software should have Rules-based storage and recording.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)

		● "Tag" or classify calls with user-defined labels for simplified search and replay. ● The software should support selective recording based upon user-defined business rules. ● The software shall be able to provide online, and offline storage capability in any combination. ● Should provide facility to store voice digitally in central database or to a hierarchical file system in any of the standard format like wav, mp3 etc. ● Archival to network attached storage or network drive should be included as a standard component with the recording platform. Recording of each call should be stored in the system.	
ICCC/TR/14.4		Call Center Communicator: The ICCC should be GUI based. It should include softphone, conference administration, popup agent works screen, unified interface for call handling, call transfer, call conference and missed call alerts. The ICCC should support Windows, Linux / Ubuntu operating systems.	
ICCC/TR/14.5		Real time agent monitoring: Should be provided with facility of barging, listening and monitoring calls.	
ICCC/TR/14.6		Voice Logger: There should provision of pre-integrated active voice logging, 100% blind recording, multi-format voice recording, automatic compression and archiving, remote access to voice logs. Quick and easy retrieval of recording file according to calls made and receive.	
ICCC/TR/14.7		Automation Platform a. Automation platform should allow citizens to interact with smart solutions. This platform should connect citizen engagement components such as IVR, chat bots, ACD to smart solutions to facilitate to and fro information. E.g. Citizen should be able to send SMS to check parking availability in the given area, IVR will use automation platform to connect to smart parking solution and retrieve the information and pass it to the citizen over SMS. The platform should also facilitate video streaming from the nearest video surveillance camera to the agent/ supervisor desktop when the caller is calling for an emergency by obtaining the location of the caller.	
ICCC/TR/14.8		Emergency Notification: The emergency notification system should be able to notify critical information to citizens using audio, SMS and email based on target criteria such as location, demography of citizens. It should also be possible to broadcast pre-recorded audio, text message and a combination of these to all types of IP phones, IP speakers and broadcast paging system.	
ICCC/TR/14.9		Gateways: Centralized gateways shall route the calls received from any service provider to the command and control center through 4 PRI lines provision for inbound. Another 4 PRI lines need to be provisioned for outbound calls.	

ICCC/TR/14.10		Supervisor Application: There should be the facility of supervision on telephony, agent, dialer and lead performance, independent supervisor interfaces for inbound and outbound campaigns and complete MIS management for device, voice log, services & systems.	
ICCC/TR/14.11		Voice Recording and Storage: There should be facility of taking backups of system, agent, queue configuration automatically with time interval. Solution should provide	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		graphical interface to maintain the storage location. The implementing agency will maintain the voice recording library. Incoming call recording facility to be implemented for further evaluation of complaints.	
ICCC/TR/14.12		CRM Module: CRM integration with IVR & ACD should be facilitated to enable customer profiling. Integration with any third party database, CRM or tool should be possible for seamless functioning and agent experience.	

ICCC/TR/14.13		CTI (Computer Telephony Integration Pop up) : • CTI pop-up shall appear on call takers desktop along with information of the caller (caller ID & address), which will help the call taker to call back in case of call disconnection. The application should be capable of integrating with other applications and scalable to meet the higher performance needs. The application should have capability to identify the caller location (for 2G/3G/4G phones with data connection). • CTI Application. • The CTI shall be capable of integrating with other application like CRM as per requirement. • The OS hosting the core CTI functionality shall be a flavor of UNIX or LINUX or Windows or any other supporting OS • The CTI link shall be able to pass events and information of Officer states and changes in Officer states as well as incoming calls to the computer applications, e.g.:- If the customer calls from the same no. from which caller had called earlier (registered Or unregistered), the CTI platform shall be able to automatically fetch and display at least last 5 service requests details for that customer. • In case of an abandoned calls, outbound COs should call back all abandon calls (within 600secs of call getting abandoned). • The System should offer web based application for sharing data (images, video) and location by caller to call center agents. Location tracking will be used for tracking caller location to very high accuracy by call takers to locate smart phone callers. • Automatic Call back: The automatic call back function would enable calling back the missed calls which may be received on the system. It has to work in conjunction with the ACD as well. In case call disconnects while officer is speaking to caller, a notification should be presented to officer if it needs to be called back and if selected system should auto dial back the caller (without officer dialing a number manually).	
ICCC/TR/14.14		Phones: The MSI should provide standard digital or IP phones with 6 keys functional keys. It is advised to have an option to login to ACD from the phones in case CTI fails. This is considered as one of the redundancy features in the telephony. The phones should also have at least 6 part conference facility.	
ICCC/TR/14.15		Headphones for call responders The solution provider needs to facilitate the head phones with advance features for the call responders. It should have facility of own dial pad, volume control, flash button, tone/pulse dialing switch, last number redial button, mute	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)

		button and over the head noise canceling functionality with clear sound clarity.	
ICCC/TR/14.16		Call Center Statistics The proposed solution should be able to provide real time statistics for agent/queue status, inbound & outbound call volume information in graphical format; data export in CSV & PDF format and should support windows & MAC operating system.	

ICCC/TR/14.17		**Reporting** ● The reporting system (hardware or software) shall be provided in hot standby configuration. ● The system shall provide both real-time information and historical reports. ● The system shall allow the user to set threshold on the Contact Center parameters, which shall be notified in the form of different colour on the screen of the users. ● There shall be provision to sort and filter the reports based on various criteria via date and time, Officer ID etc. ● Following category of real-time information & historical reports shall at least be available with specific dates and time with options of hourly, daily weekly and monthly, yearly in report criteria. - ACD Reports: Officer Login and Logout Reports. - Officer State Changes Report. - Queue Reports Abandon Call Reports. ● Call Details Report. ● Officer or Call taker Performance Reports: Average Hold Time per Officer or call taker, Average Call Handle Time per Officer, No. of calls handled per hour or per shifter Officer, Login & Logout duration per Officer. ● Call volume reports - number of calls during each hour, number of abandoned calls, number of incomplete calls, busy signals and rollovers, length of calls, percentage of calls answered and serviced vs. total calls received, etc. ● Provide details of calls in which the caller is placed on hold, using the following parameters: i. Hold time ii. Number of holds per call iii. Caller abandoned from hold iv. Officer or Call taker disconnected first. ● The system shall provide Officers with the real time statistics on their desktop in form of a wallboard. Officers should get a notification if they exceed any pre-defined thresholds in form of a colour change on this wallboard. e.g. the wallboard display changes if a live call duration exceeds a threshold defined for calls. ● Display call detailed reports including caller numbers, dialed number, call transfers etc. ● It should be possible to archive or store certain data for more than one year. Such selected data could	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)

		be electronically flagged to enable easy classification and then separate storage also. It shall have feature to schedule generation of reports and automatic delivery of scheduled reports to e-mail. It shall also allow automatic delivery of both manually generated and scheduled reports to a file directory or folder.	
ICCC/TR/14.18		Outbound System ● The Outbound Solution should be an integrated part of the proposed ICCC. ● The dialer should support outbound preview dialing, either automated or Officer-initiated. ● The dialer should provide campaign management tool for supervisors to manage the campaigns. ● The dialer should have the capability to fetch missed calls data from the ACD and dial out whenever the Officer is available. ● The system should be able to perform a screen pop with caller information based on the campaign. ● The system should be able to blast / dial out multiple calls and playback predefined announcements or sms static text or send emails. ● The dialer should support campaign management for data selection. ● The dialer should support Do not call list. Dialer should support agentless dialing.	

ICCC/TR/14.19		Emergency Notification System ● The broadcasting solution is required for passing important and critical instructions to a group of citizen or users besides being used as a normal paging system. The broadcasting solution should be integrated with the call control system to enable IP Phone end points, to initiate a broadcast call/ message to IP Paging end point(s) / IP Phones. ● It should support broadcast of pre-recorded audio, text messages, and a combination of these, to all types of IP Phones, IP Speakers and Broadcast paging system available. ● It should be capable of creating different broadcasting group of recipients. It should possible to add an IP Phone in two different broadcast groups. ● It should support scheduling of messages to be sent at a preset scheduled time or on a recurring basis. The duration of broadcast playback should be configurable. ● The system should be able to record all broadcasts of (pre-recorded audio) locally, with a provision to archive it on the network. The system should be able to send recorded voice message, SMS and email to the citizen based on location or demographic.	
ICCC/TR/14.20		IP Phone	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)

		● The IP phones with compatible wired headset should be supplied by the MSI. Headset should have echo cancellation. ● MSI should provide the soft phone for the desktop users. ● The IP Phone shall have an interactive and userfriendly alphanumeric display to make use of the key phone very simple. ● The IP Phone shall provide at least 6 programmable keys along with fixed feature buttons for Hold, Redial, Volume Up and Down, Mute, Hands free, Directory, Voice Message. There shall be possible to configure officer Login, Logout etc. ● The IP Phone shall include minimum two (2) port (100 /1000BaseT interface) switch for connecting PC or workstations. ● The IP Phone shall have LED or LCD Indicator for Call Waiting and Message Waiting. ● It shall be possible to create Local Phone book with at least 50 contacts as well as pull information from the directory (Integration with directory like Active directory Contact details etc.). ● The IP Phone shall support Voice Activity Detection, Silence Suppression and Echo Cancellation. ● The display shall provide features such as Date and Time, Calling Party Number and Digits Dialed. ● There shall be provision to provide electrical power to the IP phones through power adapter and via PoE (IEEE 802.3af) enabled Ethernet port. ● The IP phones shall support for POE Class 1 /Class 2 / Class3 ● The Phones shall have configurable Abbreviated Dial & Speed Dial. ● The firmware of IP phones shall be upgradable using HTTPS /FTP / TFTP/SFTP. ● It shall be possible to view call history for at least last 10 missed calls, 10 dialed calls and 10 received calls for each call taker desk. ● It shall be possible to set preferences such as Display Contrast and Ring Types. The IP Phones shall be SNMP manageable directly or through the PBX server. IP Phones or PBX server shall be able to send IP phone related SNMP traps to the configured Network Management System (NMS). MSI shall provide generic as well as vendor / OEM specific SNMP MIBs of the equipment for monitoring /management through standard NMS systems along with the equipment.	

ICCC/TR/14.21		• Alternatively may support Cloud Telephony based IVR, Call Recording, Integration	
15. Wireless Microphone Systems			
ICCC/TR/15.1	Wireless Microphone Systems	The wireless microphone shall be synchronized via RF remote channel.	
ICCC/TR/15.2		The wireless microphone shall be able to pick up audio from anywhere in the room, while maintaining quality audibility.	
ICCC/TR/15.3		The wireless microphone shall have a 24 MHz bandwidth (13 MHz for the E band).	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/15.4		The wireless microphone shall have greater than 103 dB (A) signal-to-noise ratio.	
ICCC/TR/15.5		The wireless microphone shall have a Total Harmonic Distortion less than 1%.	
ICCC/TR/15.6		The wireless microphone shall support pick-up pattern applicable to table setup.	
ICCC/TR/15.7		The wireless microphone shall have frequencies tunable in steps of 25kHz.	
ICCC/TR/15.8		The wireless microphone shall incorporate a clip-on microphone and body pack.	
ICCC/TR/15.9		The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz.	
ICCC/TR/15.10		The wireless microphone shall use Radio Frequency for communication.	
ICCC/TR/15.11		The wireless microphone be operational in temperature as per City requirement	
16. Audio Processor			
ICCC/TR/16.1	Audio Processor	The audio processor shall have auto switching/mixing capability.	
ICCC/TR/16.2		The audio processor shall accept microphone and line level signals.	
ICCC/TR/16.3		The audio processor shall support external volume and mute control.	
ICCC/TR/16.4		The audio processor shall have balance and unbalance signals.	
ICCC/TR/16.5		The audio processor shall be able to rack mount, shelf mount on cabinet or under desk.	
ICCC/TR/16.6		The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz.	
ICCC/TR/16.7		The audio processor shall be operable between 0 and +40 °C / 10% to 85%, non-condensing.	
17. Audio Distribution Amplifier			

ICCC/TR/17.1	Audio Distribution Amplifier	The audio distribution amplifier shall have balanced or unbalanced stereo or mono on a captive screw connector, unbalanced stereo or mono on RCA connectors and a 3.5 mm stereo mini jack.	
ICCC/TR/17.2		The audio distribution amplifier shall have an automatic clip limiter.	
ICCC/TR/17.3		The audio distribution amplifier shall have front panel bass, treble, and input level controls.	
ICCC/TR/17.4		The audio distribution amplifier shall be able to rack mount, shelf mount on cabinet, or under a desk as per design.	
ICCC/TR/17.5		The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz.	
ICCC/TR/17.6		The audio distribution amplifier shall be operable between 0 and +40 °C / 10% to 85%, non-condensing.	
18. Audio Extractor			
ICCC/TR/18.1	Audio Extractor	The audio extractor shall be HDCP compliant.	
ICCC/TR/18.2		The audio extractor shall be capable of HDMI/DP audio deembedding with analog stereo and digital S/PDIF audio outputs.	
ICCC/TR/18.3		The audio extractor shall be capable of de-embedding audio with/without HDMI/DP outputs connected.	
ICCC/TR/18.4		The audio extractor shall have simultaneous analog stereo and digital S/PDIF outputs.	
ICCC/TR/18.5		The audio extractor shall automatically equalize input cables.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/18.6		The amplifier shall be able to rack mount, shelf mount on cabinet, or under a desk.	
ICCC/TR/18.7		The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz.	
ICCC/TR/18.8		The audio extractor shall be operable between 0 and +40 °C / 10% to 85%, non-condensing.	
19. Distribution Amplifier			
ICCC/TR/19.1	Distribution Amplifier	The distribution amplifier shall have HDMI or DP connector inputs conf.	
ICCC/TR/19.2		The distribution amplifier shall have at least two HDMI & DP connector outputs.	
ICCC/TR/19.3		The distribution amplifier shall be HDCP Compliant.	
ICCC/TR/19.4		The distribution amplifier shall continuously verify HDCP compliance.	
ICCC/TR/19.5		The distribution amplifier shall support computer-video to 1920x1200, including HDTV 1080p @ 60Hz and 2k.	
ICCC/TR/19.6		The distribution amplifier shall support HDMI& DP specification features including data rates up to 6.75 Gbps, deep colour up to 12-bit, Lip Sync, and HD lossless audio formats.	
ICCC/TR/19.7		The distribution amplifier shall equalize input cables automatically.	

ICCC/TR/19.8		The distribution amplifier shall have built-in scaling capability to match monitor display resolutions.	
ICCC/TR/19.9		The amplifier shall be able to rack mount, shelf mount on cabinet, or under a desk.	
ICCC/TR/19.10		The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz.	
ICCC/TR/19.11		The distribution amplifier shall be operable between 0 and +40 °C / 10% to 85%, non-condensing.	
20. AV Auto Switcher			
ICCC/TR/20.1	AV Auto Switcher	The AV auto switcher shall have automatic switching capability between inputs.	
ICCC/TR/20.2		The AV auto switcher shall meet the minimum number of video and audio ports to support the design as a minimum. And additional 2 video and 2 audio ports for future connection.	
ICCC/TR/20.3		The AV auto switcher shall be capable of audio breakaway.	
ICCC/TR/20.4		The AV auto switcher shall have automatic scaling output and can support up to HDTV 1080p.	
ICCC/TR/20.5		The AV auto switcher shall have multiple digital and analog input.	
ICCC/TR/20.6		The AV auto switcher shall be HDCP compliant.	
ICCC/TR/20.7		The AV auto switcher shall be easily configurable with user friendly interface.	
ICCC/TR/20.8		The AV auto switcher shall be able to rack mount, shelf mount on cabinet or under desk.	
ICCC/TR/20.9		The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz.	
ICCC/TR/20.10		The AV auto switcher shall be operable between 0 and +40 °C / 10% to 85%, non-condensing.	
21. USB KVM Extender			
ICCC/TR/21.1	USB KVM Extender	The extender shall extend USB, keyboard, audio, video and mouse signals through a single cable CATx cable.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/21.2		The extender shall provide control on both the local and remote location. Controls include and not limited to video, keyboard, mouse and USB.	
ICCC/TR/21.3		The extender shall extend signals to a minimum distance of 300m via CATx cable.	
ICCC/TR/21.4		The extender shall automatically synchronizes the time delay of RGB signals to compensate for distance and support Auto Signal Compensation (ASC).	
ICCC/TR/21.5		The extender shall support high resolution video up to 1920 x 1200Hz (150 m); 1280 x 1024 at 300 m.	
ICCC/TR/21.6		The AC input power shall be 110-240 VAC +/- 10% at 50/60 Hz +/- 1Hz.	
ICCC/TR/21.7		The extender shall support auto-negotiable 10/100/1000 Ethernet network.	
ICCC/TR/21.8		The extender shall be operational in temperature as per City requirement	

22. Contact Centre Solution (For Helpdesk)			
ICCC/TR/22.1	Contact ntre Solution (For Helpdesk)	The contact centre solution for Helpdesk shall include VoIP based EPABX, IVRS, Automatic Call Distribution (ACD), Voice Logger Server among other hardware and software. Using the contact centre solution, citizens can contact NKGCCL through the emergency communications system or through the contact centre helpline number.	
ICCC/TR/22.2		The contact centre solution shall be able to route voice/ VOIP calls from centralized Interactive Voice Response System (IVRS) to respective call centre (s) along with interaction history of the calling party.	
ICCC/TR/22.3		The callers shall be able to access the various services through state-of-art centralized integrated Interactive Voice Response System (IVRS). The information is envisaged to be available to the customer through telephone (IVRS) and call centres operators.	
ICCC/TR/22.4		The IVRS shall establish two way communication on the same channel with customers through recorded synthesized voice in Hindi / English / Oriya or in combination of languages to give information, reply to queries and provide other.	
ICCC/TR/22.5		IVRS shall be modular and scalable in nature for easy expansion without requiring any change in the software.	
ICCC/TR/22.6		It shall be possible to access IVRS through any of the access devices such as Landline telephone, Mobile phone (GSM as well as CDMA) etc.	
ICCC/TR/22.7		IVRS shall support various means of Alarm indications in case of system failures, e.g. Functional error, missing voice message prompt, etc., and shall generate error Logs.	
ICCC/TR/22.8		The system shall have the ability to define business rules based upon which the system shall quickly identify, classify and prioritize callers, and using sophisticated routing, to deliver interactions to the best qualified operator in the any of the connected local/remote call centre, regardless of interaction channel.	
ICCC/TR/22.9		• The application shall provide (Computer-Telephony Integration) CTI services such as: • Automatic display (screen pop) of information concerning a user/customer on the call operator screen prior to taking the call based on ANI, DNIS or IVR data. • Synchronized transfer of the data and the call to the	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		call centre operator. □ Transfer of data corresponding to any query raised by any IP operator regarding a query raised by a customer whose call is being attended by the call IP operator. Call routing facilities such as business rule based routing, skills-based routing etc.	

ICCC/TR/22.10		The application shall support integration to leading CTI middleware vendors.	
ICCC/TR/22.11		It shall provide pre-integration with industry standard IVR servers and enhance routing & screen-pop by passing forward the information.	
ICCC/TR/22.12		It shall provide facilities for outbound calling list management, and software based predictive or preview dialing.	
ICCC/TR/22.13		The application shall allow service level plans to be varied by day, time of day, or a specific date.	
ICCC/TR/22.14		• Call Centre Operator's Desktop: The operators desktop shall have an application which shall fulfil the following functionalities: • It shall provide consistent operator interface across multiple media types like fax, SMS, telephone, email, and web call back. • Operator shall have VoIP based telephones (with digital display pads) on the workstation with wireless headsets. • It shall provide the operators with a help-desk functionality to guide the operators to answer a specific query intelligently. • It shall also provide an easy access to operators to previous similar query which was answered successfully. • It shall also be possible to identify a request to be a similar request made earlier. • It shall be possible for operators to mark a query as complex/typical and put in to database for future reference by other operators. • It shall be possible for operators to escalate the query.	
ICCC/TR/22.15		IVRS shall be able to get information /text/data from databases, convert to voice, and speaks it back to the caller in relevant/desired language.	
ICCC/TR/22.16		IVRS shall maintain log of all services offered which can be used for audit and analysis purpose.	
ICCC/TR/22.17		System shall provide for 100% recording of calls using a call logger. The recording shall contain detailed call information and the solution must provide advanced searching capabilities.	
ICCC/TR/22.18		There shall be enough provision for supervisory view supported by Supervisory terminals.	
ICCC/TR/22.19		System shall be able to integrate with e–mail / sms gateway so that appropriate messages can be sent to the relevant stakeholders after the interaction and any updates thereon.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)

ICCC/TR/22.20		Shall intelligently and automatically responds to email inquiries or routes inquires with skills based routing discipline to operators.	
ICCC/TR/22.21		Shall have an intelligent distribution of email to operators.	
ICCC/TR/22.22		• The contact centre solution shall support the following: • System shall be able to route emails to the Call agent using single system, based on the availability and skills and shall be able to send autoacknowledgement. • System shall provide unified agent licenses to handle voice calls and emails. • System shall support auto-forward capabilities to predefined cell phone numbers i.e. auto patching. • System shall support single solution for inbound calls, outbound calls and emails handling and intelligently route the calls to available call agent.	
23. Building Management System			
ICCC/TR/23.1	General	Building Management System (BMS) shall incorporate industry standard operating systems, communication networks and protocols. The system shall be designed to be completely modular in structure and freely expandable at any stage.	
ICCC/TR/23.2		Overall system architecture shall be as following: • Management Level for system monitoring and management • System Level for intelligence of the system and data aggregation; and • Field Level for industry standard sensors, actuators, peripherals etc.	
ICCC/TR/23.3		Each layer of the system shall operate independently of the next level up, in order to allow for fault tolerant system functionality. Most importantly, the System Level shall operate independently without support from the Management Level.	
ICCC/TR/23.4		Building Management System shall consist of Administration and Programming Control Station, a family of Standalone Digital Control Units (SDCUs) consisting of field DDCs, field devices and sensors, BMS software and web-based graphical interface. The BMS shall provide control, alarm detection, scheduling, reporting and information management for the entire facility as specified in this bid document.	

ICCC/TR/23.5		BMS shall consist of an Enterprise Server, which enables multiple DDCs (including all graphics, alarms, schedules, trends, programming, and configuration) to be accessible from a single workstation simultaneously for operations and engineering tasks.	
ICCC/TR/23.6		For Enterprise reporting and robust reporting capability outside of the trend chart and listing ability of the Workstation, a Reports Generating Application shall be installed on a BMS	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		computer	
ICCC/TR/23.7		The system shall be support BACnet/IP, LonWorks, and/or Modbus protocol.	
ICCC/TR/23.8	Standard Network Support	All DDCs, Workstation(s) and Servers shall be capable of residing directly on the Client's Ethernet TCP/IP LAN/WAN with no required gateways. Furthermore, the DDCs, Workstation(s), and Server(s) shall be capable of using standard, commercially available, off-the-shelf Ethernet infrastructure components such as routers, switches and hubs.	
ICCC/TR/23.9	System Expansion	The BMS system shall be scalable and expandable at all levels of the system using the same software interface, and the same TCP/IP level and fieldbus level controllers. Systems that require replacement of either the workstation software or field controllers in order to expand the system shall not be acceptable.	
ICCC/TR/23.10		Web-Based BMS operation shall be supported directly by the DDCs and require no additional software.	
ICCC/TR/23.11		The system shall be capable of using graphical and/or line application programming language for the DDCs.	
ICCC/TR/23.12	Workstation Requirements	The control station shall support 30 days of recording of BMS data.	
ICCC/TR/23.13		Please refer to the Operator Workstation specification section.	
ICCC/TR/23.14	General Administration and Programming Workstation Software	System architecture shall be truly client-server in that the Workstation (Control Station) shall operate as the client while the DDCs shall operate as the servers. The client is responsible for the data presentation and validation of inputs while the servers are responsible for data gathering and delivery.	
ICCC/TR/23.15		The workstation functions shall include monitoring and programming of all DDC controllers. Monitoring consists of alarming, reporting, graphic displays, long term data storage, automatic data collection, and operator-initiated control actions such as schedule and setpoint adjustments.	

ICCC/TR/23.16	Web based BMS Requirements	Any user on the network can access the system, using the following: • Internet Explorer 11 or better • Mozilla Firefox • Google Chrome	
ICCC/TR/23.17	User Interface	The operator panel on a workstation shall provide the primary interface for operator access to the BMS while also providing a tool for the annunciation of alarms and the reporting function. The operator shall have the option of switching between a text based and graphic based user interface at any time. Additionally, it shall be possible to create customized workspaces that can be assigned to user groups.	
ICCC/TR/23.18	User Security	The software shall be designed so that each user of the software can have a unique username and password. This username/password combination shall be linked to a set of capabilities within the software, set by and editable only by, a	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		system administrator.	
ICCC/TR/23.19		The sets of capabilities shall range from View only, Acknowledge alarms, Enable / disable and change values, Program, and Administer. The system shall allow these capabilities to be applied independently to each and every class of object in the system. The system shall allow a minimum of 10 users to be configured per workstation.	
ICCC/TR/23.20	Help Facility	Software shall be provided to facilitate programming and storage of the system operation manuals in the hard-disk. The operation manual shall be retrieved by Online Help mode so as to enable the operator to self-learn the system operation, command, or function as and when needed.	
ICCC/TR/23.21		The facility shall contain both text and graphics to provide information about the selected function directly.	
ICCC/TR/23.22	Alarms	The software shall be capable of accepting alarms directly from controllers, or generating alarms based on evaluation of data in controllers and comparing to limits or conditional equations configured through the software. Any alarm (regardless of its origination) shall be integrated into the overall alarm management system and shall appear in all standard alarm reports, be available for operator acknowledgment, and have the option for displaying graphics, or reports.	

ICCC/TR/23.23		Multiple priority levels of alarm shall be made available. Priority levels shall be deemed Critical Alarms and Noncritical (general) Alarms. Critical alarms shall take precedence over non-critical alarms, and high priority over low priority under normal operations.	
ICCC/TR/23.24		It shall be possible to automatically provide details on alarms to authorized users via emails and SMS facilities.	
ICCC/TR/23.25	Logging	It shall be possible to log the status or value of system points at regular intervals or on change of state and store this on hard-disk at any of the workstation.	
ICCC/TR/23.26		It shall be possible to archive this information for future reference.	
ICCC/TR/23.27	Report Generation	Standard reports shall be provided that shall be operator selectable to appear on the operator workstation and any selected printer on the network.	
ICCC/TR/23.28		Each report shall be capable of being automatically viewed/emailed to a user/recipient in Microsoft Word, Excel, and/or Adobe .pdf format.	
ICCC/TR/23.29		Reports can be of any length and contain any point attributes from any controller on the network.	
ICCC/TR/23.30		Image management functionality shall be possible to enable the system administrators to easily upload new logos or images to the system.	
ICCC/TR/23.31		The utility profile shall display the total consumption, measured peak for the current period and the previous period.	
ICCC/TR/23.32		Report generation tool shall display trending information of various building operations.	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
ICCC/TR/23.33	Data Storage	A history file capability shall be provided to allow automatic storage of certain records plus allow the operator to selectively direct critical real time system data and activity to a mass storage device for later recall and analysis.	
ICCC/TR/23.34		It shall be possible to access software packages so that the operator may format display or printouts in the form of: • Spread sheets • Bar charts • Curve plots	
ICCC/TR/23.35		History files shall be the source data for stored trend reports to be used for records and system analysis.	
ICCC/TR/23.36	Time Scheduling	There shall be real time clock facility to help in time scheduling. The scheduling feature shall not be dependent on a central database or an operator workstation.	

ICCC/TR/23.37		From the workstation, it shall be possible to configure and download schedules for any of the controllers on the network.	
ICCC/TR/23.38	Point History	For every analog and digital point in the system, point history shall be maintained.	
ICCC/TR/23.39		The system shall provide point history graphs for analog/digital points.	
ICCC/TR/23.40	Point Trend	BMS shall be capable of point trending.	
ICCC/TR/23.41		Trend samples shall be displayed in either tabular or graphical format. A minimum of eight trended points shall be able to be displayed concurrently on a graph or report.	
ICCC/TR/23.42	Totalization	For every digital point, the system shall be able to calculate: • Cumulative on-time • Cumulative off-time	
ICCC/TR/23.43		For every point, analog and digital, the system shall be able to calculate: • Cumulative time in alarm • Cumulative time overridden by operator • Cumulative time offline	
ICCC/TR/23.44	Audit Trail	The workstation software shall automatically log and timestamp every operation that a user performs at a workstation, from logging on and off a workstation to changing a point value, modifying a program, enabling/disabling an object, viewing a graphic display, running a report, modifying a schedule, etc.	
ICCC/TR/23.45	Database Manager	BMS shall include a database manager to allow the data to be managed on an integral and non-redundant basis. It shall be able to make additions and deletions to database, without affecting the existing data.	
ICCC/TR/23.46	Web based BMS Operator Software	General: • Day-to-day operation of the system shall be accessible through a standard web browser interface, allowing technicians and operators to view any part of the system from anywhere on the network via an IP address or dedicated webpage. • The system shall be able to be accessed on site via a mobile device environment with, at a minimum,	

S. No.	Parameter	Minimum Technical Requirements	Compliant (Yes / No)
		access to overwrite and view system values.	

ICCC/TR/23.47		Graphic Displays • The browser-BMS interface must share the same graphical displays as the Control Workstations, presenting dynamic data on site layouts, floor plans, and equipment graphics. The browser's graphics shall support commands to change setpoints, enable/disable equipment and start/stop equipment.	
ICCC/TR/23.48		Alarm Management • Through the browser interface, a live alarm viewer identical to the alarm viewer on the control workstation shall be presented, if the user's password allows it. Users must be able to receive alarms, silence alarms, and acknowledge alarms through a browser. If desired, specific operator text must be able to be added to the alarm record before acknowledgement, attachments shall be viewable, and alarm checklists shall be available.	
ICCC/TR/23.49	Direct Digital Controller (DDC)	**IP based Direct Digital Controller (DDC) Hardware Requirement** • All the controllers shall be UL listed and BTL certified supporting to BACnet Protocol, LonWorks or Modbus. In case, controller is not BTL certified, equivalent or higher certification shall be required. • The controllers shall support BACnet, LonWorks or Modbus (all) on native backplane. • DDC's shall have 20% as overall spare capacity & at least one spare of each type of port shall be provided.	

ICCC/TR/23.50		**Direct Digital Controllers (DDC) Capabilities** • Controllers shall combine both network routing functions, control functions, and server functions into a single unit. • Controllers shall provide the interface between the field control devices, and connect with the control station. • Controllers must be able to perform the following energy management functions as a minimum: - Time & Event programs - Holiday Scheduling - Optimum start and stop program - Night purge - Load reset - Zero energy band - Duty cycle - Enthalpy analysis and control - Run Time Totalization - Sequencing and Optimization - Exception scheduling • Each DDC must have the ability to serve out web pages containing the same information that is available from the WorkStation. The development of	
S. No.	**Parameter**	**Minimum Technical Requirements**	**Compliant (Yes / No)**
		the screens to accomplish shall not require any additional engineering labour over that required to show them at the WorkStation itself.	
ICCC/TR/23.51		**BACNet Fieldbus and BACNet SDCUs** Networking IP Network: All devices that connect to the WAN shall be capable of operating at 10 megabits per second or 100 megabits per second.	
ICCC/TR/23.52		**Field Input / Output Devices** List of Field Devices BMS shall optimize the performance of the building systems based on the input from field sensors. Field sensors to be decided and installed as approved by the Client.	
ICCC/TR/23.53		**Enclosures and Panels** Enclosures for Controllers and Electrical Panels: All the controllers shall be housed in Lockable Vandal proof boxes which shall either be floor mounted or wall mounted. These shall be free standing, totally enclosed, dust and vermin proof and suitable for the climatic conditions.	

ICCC/TR/23.54		**Data Communication** □ The communication between IP controllers shall be via a dedicated communication network as per manufacturer's standards. Controller microprocessor failures shall not cause loss of communication of the remainder of any network. All networks shall support global application programs, without the presence of a host PC.	
ICCC/TR/23.55		**Testing** □ All the certificates and test reports submitted shall be from UL/NABL approved labs.	
24. Rodent Repellent System			
ICCC/TR/24.01		The entry of Rodents and other unwanted pests shall be controlled using nonchemical, non-toxic devices. Ultrasonic pest repellents shall be provided in the false flooring and ceiling to repel the pests without killing them. However periodic pest control using Chemical spray can be done once in 3 months as a contingency measure to effectively fight the pest menace. Configuration: Master console with necessary transducer Operating Frequency: Above 20 KHz (Variable) Sound Output: 80 dB to 110 dB (at 1 meter) Power output: 800 mW per transducer Power consumption: 15 W approximately Power Supply: 230 V AC 50 Hz	

25. Firewall & Security	

S. No.	Minimum Technical Requirement	Compliant (Yes / No)
ICCC/TR/25.01	General • Should be a purpose built appliance based solution with integrated functions like Firewall, VPN and User awareness. The product licensing should be device based and not user/IP based (should support unlimited users except for VPN). The hardware platform & Firewall with integrated SSL/IPSec. • Should have minimum 40 Gbps throughput, and should be able to handle all peakloads. Throughput capacity of VPN should not be less than 15 Gbps • Should support Max 2,50,00,000 concurrent sessions for data. • Should support atleast 1,00,000 connections per second. • Should be based on multi core processors and not on proprietary hardware platforms like ASICs, Should have minimum 16 GB memory with option of upgradable to 64 GB or more. Hardware should have field upgradable capabilities for upgrading components like network cards, RAM, power supplies, fan etc. • Solution should have following deployment modes mandatory: a) L3 Mode, b) L2/Transparent Mode. • Should be deployed in High Availability. • Should support hardware fail open cards for critical interfaces and appliances level.	

	• NGFW appliance should have inbuilt storage of 250 GB or more SSD / HDD. 8 x 10/100/1000 Base-T Copper Ports, 4 x 10G SFP ports from day 1 and support for addition of 2 x 40G SFP ports. Dedicated Management and Sync Ports	
ICCC/TR/25.02	Firewall Feature: • Should be based on "stateful inspection" technology and should support access control for at least 500 predefined/services/protocols with capability to define custom services. • The communication between the management servers and the security gateways should be encrypted and authenticated with PKI Certificates	
ICCC/TR/25.03	Authentication • Support by the security gateway and VPN module: tokens (i.e. Secure ID), TACACS, RADIUS and digital certificates. Should support Ethernet Bonding functionality for Full Mesh deployment architecture. • Should support user, client and session authentication methods. User authentication schemes should be supported by the security gateway and VPN module: tokens (i.e. -Secure ID), TACACS, RADIUS and digital certificates. • Firewall should support the system authentication with RADIUS and local authentication. Both should work simultaneously. Solution should support DCHP, server and relay. • Solution shall include the ability to work in Transparent/Bridge mode.	
ICCC/TR/25.04	High Availability • Solution shall support gateway high availability and load sharing with state synchronization. • Solution shall support configuration of dual stack gateway on a bond interface or on a sub-interface of a bond interface. Solution should Support 6 to 4 NAT, or 6 to 4 tunnel.	
ICCC/TR/25.05	**User Identity / Awareness** • Should be able to acquire user identity from Microsoft/Linux Active Directory without any type of agent installed on the domain controllers. • Should support Kerberos transparent authentication for single sign on. • Should support the use of LDAP nested groups. • Should be able to create rules and policies based on identity roles to be used across all security applications. • Should have the inherent ability to detect multi-stage attacks. • Should include static analysis technologies like antivirus, antimalware/anti bot however in an integrate mode with the solution. **Security** • Should inspect the web sessions (HTTP and HTTPS both) to detect and notify the malicious web activity including malicious file downloads through the internet. Third Party/Separate appliance for SSL offloading will not be accepted. • The proposed solution should dynamically generate real-time malware intelligence for immediate local protection via integration with the separate Automated Management and Event Correlation System. • Solution should have an ability to remove all the active content, macros, block the malicious contents while sending document to the end user as clean document. • Solution should have n Multi-tier engine to detect & prevent Command and Control IP/URL and DNS. • Solution should be able to detect & prevent unique communication patterns used by BOTs i.e. Information about Botnet family. • Solution should be able to detect & prevent attack types i.e., such as spam sending click fraud or self-distribution, that are associated with Bots. • Solution should be able to block traffic between infected Host and Remote Operator and not to legitimate destination. • Solution should be able to provide with Forensic tools which give details like Infected Users/Device, Malware type, Malware action etc.	
26. Fire Suppression System for UPS Room		
ICCC/TR/26.01	Comply with NFPA 2001 or ISO 14520 standard	
ICCC/TR/26.02	Should have zero ozone depletion potential	

ICCC/TR/26.03	Have a short life span in the atmosphere, with atmospheric life time of less than 5 days	
ICCC/TR/26.04	Be efficient, effective and shall not require excessive space and high pressure for storage	
ICCC/TR/26.05	Key components are valves and its accessories, actuators, flexible discharge and connection hoses, check valves, pressure switch, and nozzles	
ICCC/TR/26.06	The hazard space volumes shall be protected from a common central or individual supply, the cylinder bank or individual cylinder system, with corresponding pipes and nozzle system.	
ICCC/TR/26.07	The individual zone/ system shall be dimensioned to give a complete discharge of the agent in less than 10 seconds into the affected zone.	
ICCC/TR/26.08	The software calculation shall be approved VdS or FM / UL. The discharge time shall not exceed 10 seconds. After end of discharge (10s) a homogeneous NOVEC 1230 concentration shall be built-up in the room.	
ICCC/TR/26.09	The design concentration shall follow ISO 14520 or at minimum NFPA 2001 for under floor, room and ceiling space. Unless otherwise approved, room temperature for airconditioned space shall be taken around 20 C. For non-air-conditioned space, the temperature shall be taken around ambient temperature. The system shall be designed with minimum design concentration of 4.4 % as applicable to Class-A & C fire.	
27. Water Leak Detection System		
ICCC/TR/27.01	Water Leak Detection Panel: • Alphanumeric LCD Display with the minimum of 3Lines • Soft Touch Membrane Keypad • LED Indication of the events like power, Alarm & Fault • Password protected event log facility • Remote monitoring via MODBUS/BACnet protocol • Configurable sensitivity adjustment • Dedicated Hooter output for local alarm	
ICCC/TR/27.02	Water Leak Sensing Cable: • Should be mechanically strong, resistant to corrosion and abrasion • Shall be constructed with two sensing wires, an alarming signaling wire and a continuity wire constructed by fluoropolymer carrier • Shall have end circuit to detect open circuit fault	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
28. Civil and Architect		

ICCC/TR/28.01	**False Ceiling (at ICCC)** - Metal false ceiling with powder coated 0.5mm thick hot dipped galvanized steel tiles of 595x595 mm with regular edge (10mm) suitable for 25mm grid supported on suitable powder coated galvanized steel grid as per manufacturer specification. The same shall be inclusive of cut outs for lighting, AC grills, Fire detectors, nozzles, etc. - 12 mm thick fire line Gypsum false ceiling and lighting troughs 300 mm as per design including 100 mm high cornices as lighting pelmets on G.I. frame work, in G.I. vertical supports at every 450mm c/c and horizontal runners at every 900mm c/c self-taping metal screws to proper line and level. The same shall be inclusive of making holes and required framing for fixing electrical fixtures, A.C. grills etc. GI vertical supports to be anchored to slab by means of anchor fasteners. **Furniture and Fixture** - Workstation size of min. 18" depth made with 1.5mm thick laminate of standard make over 18mm thick commercial board complete with wooden beading including cutting holes & fixing of cable manager etc. complete with French polish. Edges shall be factory post-formed. The desk shall have the necessary drawers, keyboard trays, cabinets etc. along with sliding / opening as per approved design with quality drawer slides, hinges, locks etc. - Storage unit with 18 mm thick MDF board along with 1.5 mm approved laminate colour outside and 2 coat of enamel paint inside the storage of size 1'6"x1'6"x2'4". The same should be provided with all the required accessories including the handle, lock, sliding channel and necessary hardware, etc. complete with French polish - Cabin table of min. Depth 2' made with 1.5mm thick laminate of standard make over 19mm thick commercial board complete with wooden beading including cutting holes & fixing of cable manager etc. complete with French polish. - 6" high laminated strip using 1.5mm thick laminate over 10mm thick commercial board on all vertical surface in the entire server & ancillary areas including low height partition, brick wall, partition wall, cladding etc. complete with French polish in all respect. - Enclosure for gas cylinder of Shutters and Partitions along with wooden support and 18 mm thick MDF board along with 1.5 mm approved laminate colour outside and 2 coat of enamel paint inside the shutter. The same should be provided with all the required accessories including the handle, lock, loaded hinges, tower bolt and necessary hardware etc. complete with French polish.	

	Partitions (wherever required as per approved drawing) - Full height partition wall of 125 mm thick fireline gyp-board partition using 12.5 mm thick double fireline gyp-board on both sides with GI steel metal vertical stud frame of size 75 mm fixed in the floor and ceiling channels of 75 mm wide to provide a strong partition. Glass wool insulation inside shall be provided as required. Fixing is by selftapping screw with vertical studs being at 610 mm intervals. The same should be inclusive of making cut-outs for switch board, sockets, grill etc. It shall also include preparing the surface smoothly	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
	and all as per manufacture's specification etc. finally finishing with one coat of approved brand of fire resistant coating. - With glazing including the framework of 4" x 2" powder coated aluminum section complete (in areas like partition between server room & other auxiliary areas). - Fire Rated Wire Glass minimum 6 mm thick for all glazing in the partition wall complete. (External windows not included in this). - All doors should be minimum 1200 mm (4 ft.) wide. • **Flooring** MSI shall procure and install a raised floor to match the floor height and room aesthetic in accordance with the approved final layout and design. MSI shall consider standard parameters for developing the final height, width, point of load, and uniform distribution load of the raised floor for the rooms based on type of furniture and overall load. MSI shall ensure the following features and parameters are considered while designing and commissioning the raised floor: - Point of Load (PoL) shall be considered 20% more than the actual load - Uniform Distribution Load shall be calculated according to the final Point of Load - Noise-proof, Fireproof - Maintenance window for easy access to under the raised floor - Separate electrical and data cable tray under the raised floor - Face of floor tiles shall conform to the aesthetic part of the approved design - MSI shall perform load test and noise test of the constructed raised floor. The MSI shall complete the following requirements for the raised flooring panels: - Floor shall be designed for standard load conforming to BIS 875-1987. - Panels shall be made up of 18-gauge steel of 600 mm × 600 mm size treated for corrosion and coated with epoxy conductive paint (minimum thickness 50 Micron). - Raised flooring covering shall be antistatic, high- pressure laminate, two (2) mm thick in approved shade and color with PVC trim edge. It shall not make any noise while walking on it or moving equipment. Load and stress tests on floor panels shall be performed as part of acceptance testing. • **Acoustic Requirements of Control room** - Control room being dead zone in acoustical terms, threshold should be lower than the normal.	

	- Use of Acoustics and psychoacoustics measurements are must. Vendor to highlight the same in drawings. - Materials which define acoustics; it's the detailing which ensures controlled reverberations & resonances and reflections. • **Painting** - Fire retardant paint of pre-approved make and shade to give an even shade over a primer coat as per manufacturers' recommendations after applying painting putty to level and plumb and finishing with 2 coats of fire retardant paint. Base coating shall be as per manufacturer's recommendation for coverage of paint. - For all vertical Plain surface.	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
	- For fireline gyp-board ceiling. - POP punning over cement plaster in perfect line and level with thickness of 10 – 12 mm including making good chases, grooves, edge banding, scaffolding pockets etc. - Fire retardant coating on all vertical surfaces, furniture etc. as per manufacturer's specification.	
29. PVC Conduit		

ICCC/TR/29.01	• The conduits for all systems shall be high impact rigid PVC heavy-duty type and shall comply with I.E.E regulations for standardized conduit 1.6 mm thick as per IS 9537/1983. • All sections of conduit and relevant boxes shall be properly cleaned and glued using appropriate epoxy resin glue and the proper connecting pieces, like conduit fittings such as Mild Steel and should be so installed that they can remain accessible for existing cable or the installing of the additional cables. • No conduit less than 20mm external diameter shall be used. Conduit runs shall be so arranged that the cables connected to separate main circuits shall be enclosed in separate conduits, and that all lead and return wire of each circuit shall be run to the same circuit. • All conduits shall be smooth in bore, true in size and all ends where conduits are cut shall be carefully made true and all sharp edges trimmed. All joints between lengths of conduit or between conduit and fittings boxes shall be pushed firmly together and glued properly. • Cables shall not be drawn into conduits until the conduit system is erected, firmly fixed and cleaned out. Not more than two right angle bends or the equivalent shall be permitted between draw or junction boxes. Bending radius shall comply with I.E.E regulations for PVC pipes. • Conduit concealed in the ceiling slab shall run parallel to walls and beams and conduit concealed in the walls shall run vertical or horizontal. • The chase in the wall required in the recessed conduit system shall be neatly made and shall be of angle dimensions to permit the conduit to be fixed in the manner desired. Conduit in chase shall be hold by steel hooks of approved design of 60cm center the chases shall be filled up neatly after erection of conduit and brought to the original finish of the wall with cement concrete mixture 1:3:6 using 6mm thick stone aggregate and course sand.	
30. Wiring		
ICCC/TR/30.01	• PVC insulated copper conductor cable shall be used for sub circuit runs from the distribution boards to the points and shall be pulled into conduits. They shall be stranded copper conductors with thermoplastic insulation of 650 / 1100 volts grade. Colour code for wiring shall be followed. • Looping system of wring shall be used, wires shall not be jointed. No reduction of strands permitted at terminations. • Wherever wiring is run through trucking or raceways, the wires emerging from individual distributions shall be bunched together with cable straps at required regular intervals. Identification ferrules indication the circuit and D.B. number shall be used for sub main, sub circuit wiring the ferrules shall be provided at both end of each sub main and sub-circuit. • Where, single phase circuits are supplied from a three phase and a neutral distribution board, no conduit shall contain wiring fed from more than one phase in any one room in the premises, where all or part of the electrical	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)

	load consists of lights, fans and/or other single phase current consuming devices, all shall be connected to the same phase of the supply. • Circuits fed from distinct sources of supply or from different distribution boards or M.C.B.s shall not be bunched in one conduit. In large areas and other situations where the load is divided between two or three phases, no two single-phase switches connected to difference phase shall be mounted within two meters of each other. • All splicing shall be done by means of terminal blocks or connectors and no twisting connection between conductors shall be allowed. • Metal clad sockets shall be of die cast non-corroding zinc alloy and deeply recessed contact tubes. Visible scraping type earth terminal shall be provided. Socket shall have push on protective cap. • All power sockets shall be piano type with associate's switch of same capacity. Switch and socket shall be enclosed in a mild steel sheet enclosure with the operating knob projecting. Entire assembly shall be suitable for wall mounting with Bakelite be connected on the live wire and neutrals of each circuit shall be continuous everywhere having no fuse or switch installed in the line excepting at the main panels and boards. Each power plug shall be connected to each separate and individual circuit unless specified otherwise. The power wiring shall be kept separate and distinct from lighting and fan wiring. Switch and socket for light and power shall be separate units and not combined one. • Balancing of circuits in three phases installed shall be arranged before installation is taken up. Unless otherwise specified not more than ten light points shall be grouped on one circuit and the load per circuit shall not exceed 1000 watts.	
31. Earthing		

ICCC/TR/31.01	All electrical components are to be earthen by connecting two earth tapes from the frame of the component ring and will be connected via several earth electrodes. The cable arm will be earthen through the cable glands. Earthling shall be in conformity with provision of rules 32, 61, 62, 67 & 68 of Indian Electricity rules 1956 and as per IS-3043. The entire applicable IT infrastructure in the Control Rooms shall be earthed. • Earthing should be done for the entire power system and provisioning should be there to earth UPS systems, Power distribution units, and A.C units etc. so as to avoid a ground differential. State shall provide the necessary space required to prepare the earthing pits. • All metallic objects on the premises that are likely to be energized by electric currents should be effectively grounded. • The connection to the earth or the electrode system should have sufficient low resistance in the range of 0 to 25 ohm to ensure prompt operation of respective protective devices in event of a ground fault, to provide the required safety from an electric shock to personnel & protect the equipment from voltage gradients which are likely to damage the equipment. • Recommended levels for equipment grounding conductors should have very low impedance level less than 0.25 ohm. • The Earth resistance shall be automatically measured on an online basis at a pre-configured interval and corrective action should be initiated based on the observation. The automatic Earthing measurements should be available on the UPS panel itself in the UPS room.	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
	• There should be enough space between data and power cabling and there should not be any cross wiring of the two, in order to avoid any interference, or corruption of data. • The earth connections shall be properly made .A small copper loop to bridge the top cover of the transformer and the tank shall be provided to avoid earth fault current passing through fastened bolts, when there is a lighting surge, high voltage surge or failure of bushings. • A complete copper mesh earthing grid needs to be installed for the server farm area, every rack need to be connected to this earthing grid. A separate earthing pit need to be in place for this copper mesh. • Provide separate Earthing pits for Servers, UPS & Generators as per the standards.	
32. Cable Work		

ICCC/TR/32.01	• Cable ducts should be of such dimension that the cables laid in it do not touch one another. If found necessary the cable shall be fixed with clamps on the walls of the duct. Cables shall be laid on the walls/on the trays as required using suitable clamping/ fixing arrangement as required. Cables shall be neatly arranged on the trays in such manner that a criss-crossing is avoided and final take off to switch gear is easily facilitated. • All cables will be identified close to their termination point by cable number as per circuit schedule. Cable numbers will be punched on 2mm thick standard strips and securely fastened to the. In case of control cables all covers shall be identified by their wire numbers by means of PVC ferrules. For trip circuit identification additional red ferrules are to be used only in the switch gear / control panels, cables shall be supported so as to prevent appreciable sagging. In general distance between supports shall not be greater than 600mm for horizontal run and 750mm for vertical run. • Each section of the rising mains shall be provided with suitable wall straps so that same the can be mounted on the wall. • Whenever the rising mains pass through the floor they shall be provided with a built-in fire proof barrier so that this barrier restricts the spread of fire through the rising mains from one section to the other adjacent section. • Neoprene rubber gaskets shall be provided between the covers and channel to satisfy the operating conditions imposed by temperature weathering, durability etc. • Necessary earthling arrangement shall be made alongside the rising mains enclosure by Mean of a GI strip of adequate size bolted to each section and shall be earthed at both ends. The rising mains enclosure shall be bolted type. • The space between data and power cabling should be as per standards and there should not be any criss-cross wiring of the two, in order to avoid any interference, or corruption of data.	
33. Precision Aircon for UPS Room		
ICCC/TR/33.01	• 24 X 7 operation • G4 filteration • RS485 communication • Green Refrigerant • EC Fan • Metallic body • 430 C ambient ready condenser • >90% SHR • Load sharing • Free cooling • Auto restart • Control - Microprocessors based with corded remote • Communications - RS485 based modbus • Net sensible capacity - kW - 4.22 • SHR: >0.9 >0.9 • Airflow: CMH 1100 • Unit Power Supply: 230 V, 1phase, 50 Hz • Condeser type: Air cooled	

	• Refrigerant: R407C	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
34. Access Control System		
ICCC/TR/34.01	The Access Control System shall be deployed with the objective of allowing entry and exit to and from the premises to authorized personnel only. The system deployed shall be based on Biometric Technology. Access control shall be provided for entry / exit doors. These doors shall be provided with electric locks, and shall operate on fail-safe principle. The lock shall remain unlocked in the event of a fire alarm or in the event of a power failure. The fire alarm supplier shall make potential free contacts available for releasing the locks in a fire condition especially for staircase and main doors. Entry to the restricted area shall be by showing a proximity card near the reader and exit shall be using a push button installed in the secure area. The system shall monitor the status of the doors through magnetic reed contacts. The system should be designed and implemented to provide following functionality: • Controlled Entries to defined access points • Controlled exits from defined access points • Controlled entries and exits for visitors • Configurable system for user defined access policy for each access point Record, report and archive each and every activity (permission granted and / or rejected) for each access point. • User defined reporting and log formats • Fail safe operation in case of no-power condition and abnormal condition such as fire, theft, intrusion, loss of access control, etc. • Day, Date, Time and duration-based access rights should be user configurable for each access point and for each user. • One user can have different policy / access rights for different access points.	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
35. SMART RACK		

ICCC/TR/35.01	IT Capacity	3 KW		
	No. of Server Racks (800mm Width x 1000mm Depth x 42U Height)	1		
	U space available for IT Load	22 U		
	Cooling Capacity	1 X 3.5 KW Fixed Scroll		
	Cooling Type	In Rack RCU		
	Cooling Redundancy	No		
	UPS	2*6 KVA ITA – 2		
	UPS Redundancy	Yes		
	Back up (Internal Battery)	15 Min on Each UPS Combined 30 Min		
	Battery Rack & Accessories	Externally Mounted		
	Fire Alarm & Detection	Yes		
	Detailed Monitoring & Diagnostics thru RDU	Yes		
	Temp Monitoring	Yes		
	Humidity Monitoring	Yes		
	Door Switch Sensor	Yes		
	Water Leak Sensor	Yes		
	Beacon Alarm	Yes		
	Event Alerts	Yes		
	RS485 Port	Yes		
	PDU PDU (Vertical) - with IEC Socket C13x16 & C19x4, 5/15-5 nos. 32Amp	2 nos		
	Email Notification	Yes		
	Blanking Panel	Yes		
	Power Input Panel - Single Source	Yes		
	Biometric Access Control	Yes		
	Dimensions (H x D x W) mm	2100 (H) X 800(W) X 1000(D)		
	Incoming Breaker (Client Scope)	80 A 4P MCB		
	Cable Size - Flexible AL Cable (Client Scope)	4 Cr 16 SQMM		
	Kit, Fire Suppression for SC-16-AC (Limited to Rack Only)	Yes		
	IP KVM With Display 2U 8 port AutoView KVM with 1 local and 1 remote users, VM and CAC + LCD Tray, with Keyboard and Mouse, 18.5 Inch, APAC Version	Yes		
	Rodent Repellent System	Yes		
	5 year Warranty	Yes		

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
36. OFC Cabling & Laying from SDC to ICCC		

<table>
<tr><td>ICCC/TR/36.01</td><td>

- 12-core Outside Plant Cable - Corrugated Steel tape Armored, Loose-tube, Gel-filled, 9/125 SM OS2 along with requisite nos of LIU (12F, SC, SM, FMS - Loaded with Coupler, Pigtail and Splice Trays) and LC-LC Duplex Fiber Patch Cord, OM3, 3M
- **From:** State Data Centre, Moni Bhandar at Webel Bhavan Block- EP & GP, Sector V, Salt Lake City, Kolkata, West Bengal 700091 – G + 5
- **To:** NKDA New Administrative Building, Newtown Kolkata beside HIDCO Bhavan – G + 0
- Right of Way Survey is in scope of bidder
- Cost of Micro-tunnelling as necessary is in scope of bidder
- Usage and Duct rental is in scope of bidder

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<tr><td>ICCC/TR/36.02</td><td>

12 Fiber outdoor armored SM cable, OS2		
Sr No.	**Specifications**	**Requirement**
1	**Cable Type**	12 fiber Single Mode, outdoor, Loose-tube, Gel filled cable complying to ISO/IEC 11801, EN50173, ANSI/TIA 568-C.3; suitable for use in direct burial, outdoor ducts and backbone cabling
2	**Fiber Type**	Single Mode, 9/125 micron primary coated buffers, OS2 (IEC 60793-2-50, B1.3 and ITU T G652.d)
3	**Armour**	Corrugated Steel Tape Armour of min. 0.15 mm thickness
4	**Cable Construction Type**	BELLCORE GR 20 / IEC 794-1
5	**Attenuation**	@ 1310nm <=0.34 db/Km MAX
		@1550nm <=0.22 db/Km MAX
		@ 1380-1386nm <= 0.31db/Km
6	**Loose tube material**	Single PBTP Loose tube filled with water blocking Thixotropic gel
7	**Jacket material**	HDPE outer jacket 2mm thickness
8	**Strength members**	Water Swellable Glass yarn strength members
9	**Tensile Strength**	1250 N
10	**Crush Resistance**	3000 N
11	**Min Proff Strength (Kpsi)**	100
12	**Cable Diameter**	10.0 + - 0.5 mm
13	**Operating Temperature**	-40 Degree C to +70 Degree C
14	**Test Reports**	OEM factory test reports must be provided against each drum / roll of fiber cable.
15	**3rd Party Tests**	Must be approved by Intertek ETL labs for ANSI/TIA 568C Fiber channel requirement
16	**Credential**	OEM Should be ISO9001 and ISO14001 certified for design, Development for LAN & WAN product.

Fiber LIU Rack-mountable, 1U fully loaded, SM		
Sr No	**Specifications**	**Requirement**

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</table>

1	**Fiber Management shelf**	The fiber management shelf shall have compact design and be ideal for high density front patching applications.
		Should be fully loaded and factory fitted assembly with no assembling required during installation at site
		• High Density: 1U: 6/12/24 Fiber terminations
		• Should be supplied loaded with LC adapters, splice trays, LC SM Pigtails and fiber management rings
		• Min 4 cable entry points
		• Mounting brackets can be placed in different positions
2	**Drawer style shelf**	o Easy access to splicing tray
		o Easy access to back side of connector
3	**Accessories**	Fiber management guides, radius controls & secure tie downs provided
		Pre-loaded with labeling strips
		Sealed cable inlets for dust and rodent protection
4	**Material**	Min 1.6mm CRCA Sheet steel with powder coating
5	**Approvals**	Intertek ETL certified
6	**Compact size (mm)**	44 x 450 x 320 (HxWxD)
7	**Compliance**	ROHS / ELV Compliant

LC to LC Patch Cord SM

Sr No.	Specifications	Requirement
1	**Make and Type**	LC to LC Duplex tuned Fiber Optic Patch Cord 3 Mtr, 9/125 Micron
2	**Cable Sheath**	LSZH
3	**Cable Diameter**	3.6 mm twin zip
4	**Ferrule**	Ceramic
5	**Insertion Loss**	MAX .3 db
6	**Return Loss**	> 45 db
7	**Temperature Range**	-25 Degree C to +70 Degree C
8	**ROHS**	ROHS/ELV Compliant

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
37. Switch & Router Networking		
ICCC/TR/37.01	• 48x10G ports and 4xSFP+ (shared) Managed Switch • L3 Fully Managed Switch • Full width 1-unit 1U rack mount • 960 Gps • 24 ports (independent) 100M; 1G; 10G • 24 ports (independent) 1G; 10G • Ethernet: Out-of-band 1G port (Front) Console: RJ45 RS232 (Front) • Console: Mini-USB (Front) Storage: USB (Front)	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
38. Local Application Buffer NAS		
ICCC/TR/38.01	• 32 Core, 27M Cache, Turbo, HT (150W) DDR4-2666 • 2666MT/s RDIMMs • Performance Optimized • 128GB RDIMM 2666MT/s Dual Rank • No Additional Processor • iDRAC9,Enterprise • 192TB 7.2K RPM NLSAS 12Gbps 512e 3.5in Hot-plug Hard Drive • PERC H730P RAID Controller, 2GB NV Cache, Mini card • Jumper Cord,10A,2M,C13/C14 (India BIS) • Dual, Hot-plug, Redundant Power Supply (1+1), 1100W • Trusted Platform Module 1.2 • Broadcom 57416 Dual Port 10GbE BASE-T & 5720 Dual Port 1GbE BASE-T, rNDC • Redhat OS • RAID 5	

S. No.	Minimum Technical Specifications	Compliant (Yes / No)
39. Local Application Aggregating Device		
ICCC/TR/39.01	• 16 Core, 22M Cache, Turbo, HT (125W) DDR4-2666 • 3.5" Chassis with up to 4 Hot Plug Hard Drives • Standard Bezel • Riser Config 1, 1 x 16 FH • 64 GB DDR4 RAM, 2666MT/s RDIMMs • iDRAC9,Enterprise • 960GB SSD SATA Mix Use 6Gbps 512 2.5in Hot-plug AG Drive,3.5in HYB CARR, 3 DWPD, 5256 TBW • 2TB 7.2K RPM NLSAS 12Gbps 512n 3.5in Hot-Plug Hard Drive • Internal PERC • PERC H730P RAID Controller, 2GB NV Cache, Adapter, Low Profile • Standard Heat Sink • DVD +/-RW, SATA, Internal • Jumper Cord,10A,2M,C13/C14 (India BIS) • No Trusted Platform Module • Broadcom 57416 Dual Port 10Gb, Base-T, PCIe Adapter, Full Height • Dual-Port 1GbE On-Board LOM • Redhat OS • ReadyRails Sliding Rails With Cable Management Arm • RAID 5	

1.1. Expectations from Integrated Command and Control Center Platform with Administrator Mobile Application & GIS platform

ICCC platform shall be the 'heart' of Newtown that assists in enhancing efficiencies of city operations and management of the entire city. It provides a holistic view of all city operations allowing monitoring, control and automation of various functionalities at an individual system level along with enabling cross-system analytics.
This application will be required to be installed on the State data center and data recovery center can be established at the ICCC location. This application platform will be common to entire city with different instances of each user.
The business requirements that the Integrated Command and Control Center Application Platform shall achieve are:

1.1.1. Newtown, Kolkata is a planned city with an expected **capacity of 10 Lakh residents**. The platform should have the capability to store, report, analyze and output all reasonable data for up to 10 lakh residents.

1.1.2. The MSI shall be responsible for the **initial data collection, treatment & creation of a Data Lake for the entire available set of data from all the various existing services for all citizens & administrative roles.**

1.1.3. Shall enable cross-system and cross-agency coordination to monitor, operate and manage the city in an integrated manner

1.1.4. Shall enable different agencies and departments of State and Cities to monitor and utilize information of other departments for delivering services in an integrated and more efficient manner

1.1.5. All systems being provided as part of this tender and by others (mentioned in this TENDER) shall be integrated with Command Center Application as per the requirements of the Project.

1.1.6. The platform shall enable various visualization and analytics of city operations to improve decision making. These analytics shall be achieved via cross-system integration of various systems and as per the standard operating procedure (SOPs) discussed and agreed upon with the Client. Analytics shall include both prescriptive, predictive analytics and cognitive analytics.

1.1.7. Command Center Application shall provide reporting capabilities for city administrators to keep record of city operations

1.1.8. Command Center Application shall ensure that integrity and confidentiality of all information gained is always secure

1.1.9. Command Center Application platform shall be the integration point at which data from across the city converges for processing. This shall allow all information to be managed within the same network, eliminating many communication problems that are faced by working in siloes

1.1.10. Command Center Application shall provide shift-based operations for an overall 24x7 support

1.1.11. Map and integrate all systems to city specific GIS platform being provided as part ofthis TENDER

1.1.12. The system shall be scalable to accommodate future growth and support hardware and software additions and upgrades.

1.1.13. Command Center shall leverage information provided by multiple city systems to support

an integrated, seamless, proactive and comprehensive response mechanism for day-to- day city operations and challenges. The platform shall provide a combination of system layers that when combined shall make use of Data, ICT and ITS infrastructure, advanced computing, analytics, and visualization to enhance the city's intelligence. In addition, it shall provide the tools for the city decision makers to better manage the services they provide to its citizens.

1.1.14. There are several functions and systems that shall be managed out of the Command Center Application. Depending on the type of systems and functions, they shall be monitored and/or controlled from the Command Center Application and will have the option of sharing a feed to another agency as required via the platform. This shall integrate all the City Systems procured under the Smart City Mission, which include systems procured through this project and system which are/will be procured as other projects. In addition to systems identified in this TENDER, the Command Center Application shall seamlessly integrate the following system but not limited to:

Sl No	Project Name	Smart Features
1	Installation of Solar Panels with LED lights on top of a 1.7 km stretch of Link Canal (both sides 3.4 kms)	Ultrasonic wind sensor, power generation, health & others
2	Providing Smart Street Light arrangement on the service Road of MAR-1111 at the Axis Mall side at New Town, AA-IC in New Town, Kolkata	Remote on off, dimming and metering feature& others
3	Installation of Smart energy efficient digitally enabled lighting near New Town Plaza/Clock tower, within ABD (Part I: Replacement of Existing Street Lighting for Energy Saving through Smart Control along with betterment of illumination at different locations at New Town AA-IA, New Town, Kolkata	LoRaWAN technology at the Clock Tower, with remote on off, dimming and metering feature within a range of 15 kms
4	Installation of CCTV Surveillance with artificial intelligence at Rabindra Tirtha Complex under WBHIDCO	Analytics to monitor incidence of litter detection and zone monitoring
5	Improvement of Citizen Communication through Cloud Connected LED Public Address System	LED display for citizen awareness - Control & Message Pushing
6	Construction of Water Conservation Measure within Eco-Park with Quality and Level Monitoring System	Water quality monitoring and water level monitoring through sensors
7	Smart Bus Shelter at three locations of New Town Kolkata	The Smart Features - Ø LED, directional, scrolling display Ø Public Address System Ø Drinking Water Fountain Ø Area under CCTV Surveillance Ø Public Toilet
8	Bee Corridor at Eco Park, New Town, Kolkata	Population record, data about interaction with urban environment, grading of honey
9	Development of Integrated Vehicular and Pedestrian Safety Measures using Smart Techniques - Intersection of Biswa Bangla Sarani, New Town, Kolkata	Project Satus Monitoring
10	Co-working Space: Community Living and Working -	Library, health club, game zones, café, lounge, ATMs, shops, Forex & travel desks
11	Implementation of Public Wi-Fi Zone at different locations of New Town, Kolkata using HIDCO's Backbone Network System (Ph-I) including 05 (Five) years Operation and Management	Public Wi-Fi
12	Purchase of 3(Three) nos. Battery Operated AC Electric Buses including 5yrs. AMC under WBHIDCO ltd. New Town. Kolkata	Location data, Usage, Range, Stop Analysis
13	Development of Inter - State Bus Terminus	Wi Fi facilities
14	Construction of Vertical City in CBD of New Town, Kolkata	gym, swimming pool, health club, spa - Project Status
15	Providing Power Connection to the newly installed EV chargers at AA-II, New Town,	Project Status Monitoring

16	Implementation and Operation of Electronic Health Record (EHR) of Birth/Death Module of NKDA using Blockchain Technology	Data stored in an immutable fashion which is time stamped. Analytics
17	CCTV surveillance with video Analytics for different locations of New Town business Club, New Town, Kolkata	litter detection and zone monitoring
18	Integration of CCTV Surveillance for Supervision and Monitoring of Subway Akansha More, New Town, Kolkata	Only feed, no analytics
19	Setting up and Running of 24/7 Toll Free Citizen Helpline for New Town Kolkata	Integrated Grievance Management System
20	Construction of Cattle Barrier and CCTV surveillance in front of NCB (Narcotic Control Bureau) Office Building within Action Are - I, NKDA	CCTV camera feed
21	Greening of Metro Pillars by IoT enabled vertical Garden -	Moisture Sensor
22	Smart Parking Solution in Tata Cancer Hospital at Action Area ID, New Town, Kolkata	Location detection, paying for exact time parked, app-based solution, payment integration
23	Implementation of Municipal administration & governance system within the e-district eco system comprising Municipal Transaction Processing System, Citizen Interface System, Municipal Monitoring & Evaluation System and Municipal MIS for delivering G to C and G to B services - property Tax, Water Charges, Birth & Death Registration, Trade license, User charges, Building Permission, Grievance Redressal, Common services, Investment Facilitation.	1) SMS Service, 2) Mailing provision for certificates to be received, 3) cancellation of documents post being digitally signed, 4) provision for integrating with WhatsApp 5) Cross-reference analytics 6) Status Data
a	Municipal Services - Payment of Property Tax	
b	Assessment of Property Tax	
c	Building Plan Sanction by NKDA	
d	Enrolment of Technical Persons at NKDA	
e	Generation and Payment of Water Charge at NKDA	
g	Issuance of Occupancy Certificate by NKDA	
h	Issuance of Partial Occupancy Certificate by NKDA	
i	Issuance of Record of Title (Mutation) by NKDA	
j	Issuance of Temporary Water connection by NKDA	
k	Issuance of Trade License by NKDA	
l	Registration of Birth at NKDA	
m	Registration of Death at NKDA	
n	Renewal of Building Plan by NKDA	
o	Renewal of Enrolment for Technical Persons at NKDA	
p	Renewal of Partial Occupancy Certificate by NKDA	
q	Renewal of Trade License by NKDA	
24	Installation of Smart Energy Efficient LoraWan based lighting application at different area of New Town, AA-IA,IB & IC	auto switch on and switch off along with sending message to the control room on the health of the lights
25	Smart Sensory Park in Action Area II under NKDA	Audio visual element adds to the smart features of the park
26	Construction of smart Bus Shelter in front of New Town Mela Ground & Retrofitting of the existing one in front of Swapnobhor in connection with Smart Street at AA-I, of New Town, Kolkata	Public Information System, Advertisement Panel - Message Push & Monitoring
27	Technology Enabled Smart Street Signage, AA-I, New Town, Kolkata (421 loaction of AA-I)	421 CCTV cameras, panic button
28	Selection of Agency to Design, Procure, Install, Operate and Maintain Public Bicycle Sharing System in New Town Kolkata	App based bi-cycle ride operations and maintenance
29	Installation of IOT enabled outdoor Public Message Boards in New Town, Kolkata	Ambient air quality monitoring sensors

30	Supply, Installation, Commissioning and testing of IOT enabled Solar benches as per given technical specification in front of Senior Citizens ' Park and New Town Mela Ground in New Town, Kolkata	Panic Button, Web App, Anti-Theft Alarm, Mobile and SMS Alerts
31	Supply and installation of one unit of smart outdoor air purifier including one year's maintenance, operation and collection of air quality data for reduction of particulate matter (both PM10 and PM 25) from ambient air at location near Bus Stand Island (Action Area I, New Town), adjacent to Cafe Ekante food kiosk on pilot basis.	Project status Monitoring, Air Cleaned Volume analysis
32	Supply, Installation & Commissioning with Five years comprehensive Operation & maintenance of 1000 kW(2X500kW) on Grid SPV Power Plants on Canal Top at Bagjola Canal, New Town, Kolkata	Power Consumption, Health Monitoring
33	Urban Primary Health Centre (UPHC) II/C/BKL/22/1, New Town, Kolkata	Telemedicine room, web chatting room
34	Supervisory Control and Data acquisition system for advanced management plans of potable water resources at New Town	SCADA output
35	Arrangement of garden water by Solar Power Pumping Sets at different areas in AA-I & II under New Town, Kolkata	Interfacing GPRS based data transmission (total run time, total water pumped etc)
36	Construction of Captive Drainage pumping Station (DPS) with Smart pumping Arrangement at Balaka Abasan under NTK Project	Smart Level Sensor, automated running and tripping of pumps
37	Design, Construction of Public Convenience Building (Near Axis Mall) at AA- IC, New Town, Kolkata	Project Monitoring System
38	CCTV Surveillance System for New Town Kolkata (Part - I)	Bullet Camera, PTZ and Dome Camera with machine learning facility, and AI enablement Select cameras will have ANPR too for number plate reading – **Integration of up to 2500 CCTV Camera at the ICCC**
39	Setting up Integrated Interactive Tele presence system between VC Rooms of Smart City, NKDA & HIDCO. External Voip Connectivity Zoom, Skype	Live feed of participants
40	Supply, Installation, Annual Operation & Maintenance Support for " Toilet Feedback Monitoring System" for New Town Kolkata	Citizen feedback on cleanliness, overall satisfaction, footfall in individual toilets
41	Development of a Centre for Innovation, New Town Kolkata	Project Status Monitoring
42	Multi storied Car Parking Complex at CBD -117&118 in New Town, Kolkata	CCTV surveillance & Building Management System, Entry – Exit security kiosks with access control systems
43	5 (five) solar trees at the Smart Street beside 'Mela Ground' and 'Swapna Bhore' in New Town, Kolkata	Power Generation, Health, Status Monitoring
44	Setting up and operation of 25 Electric Vehicle Charging Units and related infrastructure at the location of Proposed Multi Level Car Parking plaza in New Town Kolkata	Occupancy etc
45	Drone Surveillance of New Town	Drone live feed
46	Smart Pothole	Pothole detection
47	Kolkata Gate sensors	Wind speed, load, direction etc
48	HIDCO Bhavan weather station	Wind speed, load, direction etc
49	10 kW floating solar power plant at Smriti Bon	Power generation, Health, Status Monitoring
50	Vehicle Tracking system for solid waste and road sweeping	Vehicle position data, Solid Waste Collection Data, Utilization
51	CCTV surveillance at Swopno Bhor	CCTV data feed
52	Canal level monitoring through IOT	Monitoring of water level
53	CCTV surveillance at Eco Park	CCTV data feed
54	Citizen Health Centre at Swopno Bhor	Citizen health database

55	Smart Home Tag for all premises of Newtown for NFC enabled quick data access for Taxes, Electric Supply	Scanning & utilization data, Cross-reference with SWM, Tax, Electric Consumption
56	Passenger Information System for 29 Bus Newtown Stops	Bus location, Stop wise data, live status, others

Note: **Responsibility of integration is of the MSI, whereas MSI for other application which is to be integrated, MSI will be responsible for providing interface layer / API / SDK in its system for doing the application. Smart City MSI will be responsible for getting required interface layer / API / SDK for particular application from respective vendor / SI for MSI to integrate with Common Command Center Application.**

1.1.1. ICCC Platform Functional Specifications

1.1.3.1 Functional Specifications of the Application Software

Various functional requirements of the CCC application System are given in the table below:

#	Functions	Minimum Specifications	Compliant (Yes / No)
1	Solution & Platform	The Command & Control solution should be implemented and complied to the industry open standards based Commercial-of-the-shelf (COTS) products.	
.		The CCC shall embody the following characteristics: 1. Client/server architecture 2. Support multi-site, multiple-hierarchy deployment 3. Provide clear scalability 4. Central administration capability 5. Support local redundancy and high availability options 6. Employ encrypted communications over TCP/IP LAN's and WAN's 7. Capable of running in a virtual environment 8. Provide a mechanism to define key performance indicators, trends, leading indicators and visualize the indicators on a web based configurable dashboard infrastructure 9. Provide a mobile portal to allow viewing of incidents and relevant details 10. Display a configurable indication of overall situation threat level 11. Provide communication capability to include email, text, telephone, intercom, mass notification, and application-based messages	

		12. Should include a mobile app for field personnel & administrator, which enables its users to receive incident details (including: tasks, forms, photos) and a comprehensive set of GIS capabilities, to ensure collaborative response aligned with the control room's operator 13. Should support mobile app API connectors for Newtown citizens who can register themselves after downloading the app on iOS or Android phones and then share incident related videos, text, photos etc. To the command center 14. Support the simulation of events, such as alarms, for training purposes.	
3a		**Integration of up to 2500 CCTV Camera Live Feed at the ICCC from Network connected CCTV Camera. The same should be viewed on real-time with at least 250 camera feed to be projected onto the Video-wall at any given time.**	
3b		Software (Application, Database and any other) must not be restricted by the license terms of the OEM from scaling out on unlimited number of cores and servers during future expansion.	
#	**Functions**	**Minimum Specifications**	**Compliant (Yes / No)**
4		System must provide a comprehensive API (Application Programming Interface) or SDK (Software Development Kit) to allow interfacing and integration with existing systems.	
5		The solution should be network and protocol agonistic and provide option to connect legacy system through APIs with either read, write or both options. It should connect diverse on premise and/or cloud platforms and makes it easy to exchange data and services between them.	
6		The system shall allow seamless integration with all of the department's existing and future initiatives (e.g. open source intelligence, situation management war room, etc.)	
7		The platform should be able to integrate with any type of sensor platform being used for the urban services irrespective of the technology used. The platform should also allow the manufacturers of the sensors to develop integrations themselves using SDKs without affecting the northbound applications and existing integrations"	

	Convergence of Multiple feeds / services	System need to have provision that integrates various services and be able to monitor them and operate them. The solution should provide option to integrate existing deployed solution by City and also need to provide scalability option to implement new use cases. System should have capability to source data from various systems implemented in Newtown (being implemented as part of this project or other projects) to create actionable intelligence	
9	Industry Standards for the Command and Communications Center	The solution should adhere to the industry standards for interoperability, data representation & exchange, aggregation, virtualization and flexibility	
#		IT Infrastructure Library (ITIL) standards for Standard Operations Plan & Resource Management	
#		Geo Spatial Standards like GML & KML etc.	
#		Business Process Model and Notation (BPMN) or equivalent for KPI Monitoring.	
#	Command and Communications Operations	The solution shall provide a unified viewing and management GUI that enables operators to manage situations in a consistent manner, regardless of underlying integrated systems.	
		The Solution shall process events automatically, perform correlations, prioritization and rule-based calculations based on a predefined business logic.	
#	**Functions**	**Minimum Specifications**	**Compliant (Yes / No)**
#		The Solution shall facilitate the management of situations, as opposed to individual alarms	
		The Solution shall have facilities to support routine management, such as scheduler, tour management tool, intercom and messaging and allow seamless escalation from routine to emergency management.	
#		The Solution shall have applications to support the complete operational cycle of Planning, Responding and Debriefing.	
#		The Solution shall support the planning and activation of dynamically adapting response plans to real time varying situations.	
#		The Solution shall have an at-a-glance operational status view that will indicate all exceptions such as alarms, outstanding events that still require attention, and escalations.	

#		The system must provide Incident Management Services to facilitate the management of response and recovery operations:	
		Define conditional tasks with pre-configured branching options for presentation to users and with procedures and response plans which change dynamically based on users' selections	
	Incident Management Requirements	define automatic procedure tasks that initiate actions, including **a)** sending messages **b)** displaying video **c)** popping up pre-configured GIS map views **d)** adjusting incident's details, such as editing incident name or raising the severity **e)** level **f)** inserting another procedure into action	
#		define key performance indicators, trends, leading Indicators for visualization on a web-based configurable dashboard	
#		configure and monitor service levels and trigger actions for monitored key performance indicators	
#		Should support for multiple incidents with both segregated and/or overlapping management and response teams.	
#		Should support Geospatial rendering of event and incident information.	
#		Should support plotting of area of impact using polynomial lines to divide the area into multiple zones on the GIS maps.	
#		GIS map functions shall include 2D and 3D views, synchronized, displaying the same objects and areas, and easily switched from one	

#	Functions	Minimum Specifications	Compliant (Yes / No)
		view to the other	
#		The GIS map function shall provide the ability to track movements, real- time and historical, and status of all location-based technologies, including GPS and RFID	
		The GIS map function shall further support: 1) layer types capable of being toggled on/off per pre-defined rule 2) saving of multiple GIS map views for later on-demand or automatic popup	

		3) customization and real time activation of multiple-level drill downs by linking objects placed on map layers to other GIS view 4) definition and drawing of zones of arbitrary shapes and sizes and rendering as layers	
		An operator shall be able to perform below on GIS map views b. place of predefined objects on map locations to include cameras, other sensors, sensors, alarm points, representation of sensor groups, vehicles, and people c. add points, polylines, and polygons to maps to identify multiple locations related to an incident d. place or directly open incidents on a map e. filter display multiple locations related to an incident	
#		Should support incorporation of resource database for mobilizing the resources for response.	
#		Should provide facility to capture critical information such as location, name, status, time of the incident and be modifiable in real time by multiple authors with role associated permissions (read, write). Incidents should be captured in standard formats to facilitate incident correlation and reporting.	
#		The system must identify and track status of critical infrastructure / resources and provide a status overview of facilities and systems	
#	Integrated User Specific & Customizable Dashboard	Should provide integrated dashboard with an easy to navigate user interface for managing profiles, groups, message templates, communications, tracking receipts and compliance	
		Should provide current status (snapshot) of organization's facilities, departments and a holistic perspective of incidents and situations, including incident handling time, number of false alerts, and number of active and closed incidents	
#	**Functions**	**Minimum Specifications**	**Compliant (Yes / No)**
		· Collects major information from other integrated City sensors/platforms.	
		· Should allow different inputs beyond cameras, such as, PC screen, web page, and other external devices for rich screen layout	
		· Multi-displays configurations	

		· Use of GIS tool which allows easy map editing for wide area monitoring (Google map, Bing map, ESRI Arc GIS map, etc.).	
#		Should provide dashboard filtering capabilities that enable end-users to dynamically filter the data in their dashboard based upon criteria, such as region, dates, product, brands, etc. and capability to drill down to the details	
#	Integration with Social Media & Open Source Intelligence	Should provide integration of the Incident Management application with the social media. Should provide analytics based on the social media feed collected from the open source intelligence and collate with the surveillance inputs to alert the responders for immediate action on the ground.	
#		Should extract messages and display it in an operational dashboard.	
#		Should be able to correlate the extracted message from the social media with existing other events and then should be able to initiate an SOP.	
#		Should be able to identify the critical information and should be able to link it to an existing SOP or a new SOP should be started.	
#		Should provide notifications to multiple agencies and departments (on mobile) that a new intelligence has been gathered through open source/social media.	
#	Device Status, Obstruction Detection and Availability Notification	Should provide ICON based user interface on the GIS map to report non-functional device.	
#		Should also provide a single tabular view to list all devices along with their availability status in real time.	
#		Should provide User Interface to publish messages to multiple devices at the same time.	
#	Event Correlation	Command and Communications Center should be able to correlate two or more events coming from different subsystems (incoming sensors) based on time, place, custom attribute and provide correlation notifications to the operators based on predefined business and operational rules in the configurable and customizable rule engine.	
#	**Functions**	**Minimum Specifications**	**Compliant (Yes / No)**

#		Command and Communications Center should provide for authoring and invoking un-limited number of configurable and customizable standard operating procedures through graphical, easy to use tooling interface.	
#		Standard Operating Procedures should be established, approved sets of actions considered to be the best practices for responding to a situation or carrying out an operation.	
		The solution shall provide a visual environment to design business workflow processes that map business rules into a set of workflows to provide automatic responses.	
#		The users should be able to edit the SOP, including adding, editing, or deleting the activities.	
#		The users should be able to also add comments to or stop the SOP (prior to completion).	
#	Standard Operations Procedures (SOP)	There should be provision for automatically logging the actions, changes, and commentary for the SOP and its activities, so that an electronic record is available for after-action review.	
#		The SOP Tool should have capability to define the following activity types:	
#		**Manual Activity** - An activity that is done manually by the owner and provide details in the description field.	
#		**Automation Activity** - An activity that initiates and tracks a particular work order and select a predefined work order from the list.	
#		**If-Then-Else Activity** - A conditional activity that allows branching based on specific criteria. Either enter or select values for Then and Else.	
#		**Notification Activity** - An activity that displays a notification window that contains an email template for the activity owner to complete, and then sends an email notification.	
#		**SOP Activity** - An activity that launches another standard operating procedure.	
#	Key Performance Indicator	The CCC shall allow definition of key performance indicators, trends, leading Indicators and visualize the indicators on a web based configurable dashboard infrastructure.	
		The CCC shall allow configuration and monitoring of service levels for key performance indicators and triggering of actions towards the incident	

		management system when those service levels are breached	
#	**Functions**	**Minimum Specifications**	**Compliant (Yes / No)**
#		**Green** indicates that the status is acceptable, based on the parameters for that KPI, no action is required.	
#		**Yellow** indicates that caution or monitoring is required, action may be required.	
#		**Red** indicates that the status is critical and action is recommended.	
#	Reporting Requirements	Command and Communications Center should provide easy to use user interfaces for operators such as Click to Action, Charting, Hover and Pop Ups, KPIs, Event Filtering, Drill down capability, Event Capture and User Specific Setup	
#		The solution should generate Customized reports based on the area, sensor type or periodic or any other customer reports as per choice of the administrators	
		The CCC shall provide a repository of built-in relevant reports, including:	
		1) Incident Reports	
		a) Detailed incident reports shall include an incident summary, all the tasks associated with the incident, sensor related activities, relevant snapshots, and maps.	
		2) Periodic Reports	
		3) Maintenance Reports	
		4) Statistical Reports	
		The CCC shall have a built-in reporting engine that will allow on demand or automatic report generation, configurable by the Administrator and	
		with customization options	
	Collaboration among Stakeholders	The CCC shall enable stakeholder collaboration where incidents/tasks triggered automatically or manually by control room operators are distributed to the correct owners in incident/task context, such collaboration to include:	
		a) allowing departments to work autonomously	
		b) allowing logical locations or project groups to work autonomously	
		c) allowing inter-department collaboration	

#		Collaboration shall include content such as markups, comments, tasks, and forms.	
#	Asset Management	The system shall provide the capability to define, search, and locate assets of various types, including vehicles, buildings, and people.	
#		Asset management shall be fully integrated with the events correlation/ workflows / rules engine and shall allow defining various triggers based on specific assets, asset types, asset groups and assets attributes.	
#	**Functions**	**Minimum Specifications**	**Compliant (Yes / No)**
		The system shall enable assets to be displayed on maps with their corresponding GIS locations and unique icons.	
		a. The context menu associated with an asset's map icon shall allow direct dialing of a phone number, if available.	
#	Communication Requirements	The solution should adhere to the below mentioned communication requirements.	
		The system shall allow email messages based on templates to be initiated by users in response to incidents or invoked by rules-based	
		automatic actions.	
#		Provide the capability to invite using information provided during the location of those individuals or roles, invite them to collaborate and to share valuable information.	
		The System shall support on-demand or automatic outgoing call initiation.	
		a) The SMS shall maintain an electronic telephone book that may be searched or used for on-demand calling.	
		b) Calling capability shall be available via GIS map icons.	
		c) SIP protocol shall be supported.	
#		Provide a single web-based dashboard to send notifications to target audiences using multiple communication methods including voice-based notification on PSTN/Cellular, SMS, Voice mail, E- mail and Social Media	

#		The solution should provide Dispatch Console integration with various communication channels. It should provide rich media support for incidents, giving dispatchers the power to consolidate information relating to an incident and instantly share that information among responder teams. It should assess the common operating picture, identify & dispatch mobile resources available nearby the incident location. Augment resources from multiple agencies for coordinated response.	
#	Authentication	Use authentication information to authenticate individuals and/or assign roles.	
	Events and Directives control	Should provide the capability for the events that are produced from a sub- system and are forwarded to the Command and Communications Center. Events could be a single system occurrence or complex events that are correlated from multiple systems. Events could be ad hoc, real- time, or predicted and could range in severity from informational to	
		critical. At the Command and Communications Center, the event should	
#	**Functions**	**Minimum Specifications**	**Compliant (Yes / No)**
		be displayed on an operations dashboard and analyzed to determine a proper directive.	
#		Directives issued by the Command and Communications Center should depend on the severity of the monitored event. Directives will be designed and modified based on standard operating procedures, as well as state legislation. A directive could be issued automatically via rules, or it could be created by the operations team manually.	
#	Alert & Mass Notification Requirements	The system should provide the software component for the message broadcast and notification solution that allows authorized personal and/or business processes to send large number of messages to target audience (select-call or global or activation of pre-programmed list) using multiple communication methods including SMS, Voice (PSTN/Cellular), Email and Social Media.	
#		Provide a single web-based dashboard to send notifications to target audiences using multiple communication methods including voice-based notification on PSTN/Cellular, SMS, Pager, Voice mail, E-mail and Social Media	

#		Provide function for creating the alert content and disseminating to end users. Provision of alerting external broadcasting organizations like Radio, TV, Cellular, etc., as web-service.	
#	Security & Access Control	Provide Role based security model with Single-Sign-On to allow only authorized users to access and administer the alert and notification system.	
#	Internet Security	Provide comprehensive protection of web content and applications on back-end application servers, by performing authentication, credential creation and authorization.	
#	Authorization	Comprehensive policy-based security administration to provide all users specific access based on user's responsibilities. Maintenance of authorization policy in a central repository for administration purposes.	
#	User group	Should provide support to enable assignment of permissions to groups, and administration of access control across multiple applications and resources. Secure, web-based administration tools to manage users, groups, permissions and policies remotely	
#	Flexible single sign-on (SSO)	SSO to Web-based applications that can span multiple sites or domains with a range of SSO options.	
#	Authentication	Support LDAP authentication mechanism	
#	Rule Engine &	Should have ability to respond to real-time data with intelligent &	
#	**Functions**	**Minimum Specifications**	**Compliant (Yes / No)**
	Optimization	automated decisions	
#		Should provide an environment for designing, developing, and deploying business rule applications and event applications.	
#		The ability to deal with change in operational systems is directly related to the decisions that operators are able to make	
#		Should have at-least two complementary decision management strategies: business rules and event rules.	
#		Should provide an integrated development environment to develop the Object Model (OM) which defines the elements and relationships	

		Debriefing and analysis tools enable detailed incident reporting and debriefing with time-coded playback of events. Using the Control Room application, planners can simulate alarms and events for realistic	
		training exercises and to help find gaps in existing procedures.	
		The control room operator should have access to Dial 100, Citizen helpdesk and radio gateway recorded calls along with surveillance camera (new & existing) video feeds. The CCC solution should support	
		scenario reconstruction with Voice & Video data on a single timeline.	
	Debriefing Module	Debriefing Tool should enable immediate access to incident data, allowing it to be synchronized and replayed exactly as it happened for postmortem analysis and review. The recorded multimedia, whether it be audio, CCTV, telephony, photos, radar screen captures and more, can be reviewed, tagged and organized in a secured incident folder, and then easily and securely distributed and shared within an organization or	
		between agencies.	
#		All communications (Video + Voice – Radio & Telephony etc..) related to a single incident should be able to replay in the sequence in which the communications occurred to better understand the entire incident and the SOPs that were carried out with timestamp for completion of each SOP. This will enable the city operations to find gaps in the incident handling and improve or rewrite any SOP.	
#		The debriefing module should allow multi-media and multi-source searches from a single application without the need to shift between applications and databases eg: recorded audio from radio logger and telephony logger, recorded video from video logger etc..	
	Mobile Module – 2 - way communication for Field	a. Create an incident from the field	
		b. View incidents and relevant incident information including location and attachments	
		c. Exchange comments with the control room operators and other	

#	Functions	Minimum Specifications	Compliant (Yes / No)

		users	
	personnel	d. Support incident management at offline mode with ability to sync information when reconnect with network	
		e. Use a native app (iPad) running IOS operating systems or web based portal	

2.1.3.2 Functional Requirement Specifications

Sr. No	Functional Requirement Specifications - Web Portal- User Management	Compliant (Yes / No)
1	System would allow user to view any Service information from Departments displayed on Web portal.	
2	User – self registration and first-time password change prompt.	
	System would allow user to login and avail services from any of the modules.	
3	During user id creation system would ask for Security question for any password reset request by user in future.	
4	System would prompt user to create password as per security policy. Alphanumeric passwords would be asked.	
5	System would ask user to create a transaction password to be used for performing any financial transaction with the concerned departments or while making any changes in the profile.	
6	During user id creation, system would ask user to furnish all personal details like	
	· Name	
	· Sex	
	· Age	
	· Address	
	· Phone no.	
	· Email id	
	· Occupation	
	· Family details	
	· PAN/License/Passport/Voter Registration No. / UID No. or any other Id proof details.	
Sr. No	**Functional Requirement Specifications - Web Portal- User Management**	**Compliant (Yes / No)**
7	System would prompt user to login using user id and password created and verify them.	

8	On successful password match, system would allow the user to login to the portal and allow him to access his/her profile.	
9	On unsuccessful password match, System would generate password error message and ask user to enter correct password in order to login to his/her profile.	
10	System would allow user to view his/her profile after login.	
11	System would allow user to edit his/her personal details like Name, Address etc.	
12	System would display the service-related information/Instructions to fill up requested details in the entry forms like applicable fee and documents to be attached/submitted along with application request.	
13	For CCC Operator, system would initially allow CCC operators to login using their login ids and passwords as given by System administrator. After first time login by all CCC operators the system would ask them to change their password (alphanumeric) as per the security policy.	
14	After successfully changing the password and verifying the same on to the system, CCC operator would get access to all the modules, can accept and insert details of the requests received by the citizens for specific modules.	
15	System would display instructions to CCC operators at the time of inserting details in the request form for various applications.	
16	CCC Operator would read out the instructions to citizen like applicable fee, documents required along with service request and collect the same. Required documents would be scanned & attached with the request by CCC Operator.	
17	System would ask CCC operator "Do you really want to submit the form" to cross-verify and register a request when he clicks on the submit button for each request.	
18	System would allow Department official to login using his/her user id and password as provided by System administrator.	
19	On successful password match, system would allow Department user to access requests submitted to him/her, pending for his approval or pending for field verification.	
20	On unsuccessful password match, System would generate password error message and ask department user to enter correct password.	
21	System would allow Department user to perform service processing functions as discussed in Department application module in following sections.	
Sr. No	**Functional Requirement Specifications - Web Portal- User Management**	**Compliant (Yes / No)**

	· If any of the login details are not authenticated then the User would be shown the error message "Invalid login details. Please re-enter".	
	· Deactivated Users should not be able to login into the application.	
	· For all other active Users, in case of a successful login, the User would be directed to "My Dashboard/Profile" section of the application.	
22	User Logout: System would allow user to log out whenever he intends to.	
23	System would automatically terminate the login session if user closes the window by any chance without logging out of the system.	
24	System would automatically terminate the login session if no activity is noticed in the profile after login for a specified time interval. The time period defined in "web.config" file must be configurable as per the requirements and when required. By default the time should be 15 minutes.	
25	Once the user has logged out or automatically logged out by the system, the system would prompt user to re-enter User details and verify password if the user wants to login.	
26	System would prompt users to change their profile & transaction password after regular time intervals.	
27	System would notify the CCC/Department user on successful password change by showing alert message on screen during password change. Whereas for citizens an email would be sent to their registered mail id as specified in their profile informing the change in password for their user account.	
28	In case user forgets the password, system would allow user to reset the password.	
29	System would ask user to answer the security question created during profile creation for resetting the password.	
30	System would match the user response with the user records.	
31	On successful security question and answer match, system would ask user to update new password. System would prompt the user to re-enter the new password.	
32	System would match the new password entered twice before submission and notify user on successful password reset activity.	
33	In case of unsuccessful match, system would prompt user to enter same password twice for matching.	
34	Once the password has been changed, system shall ask user to use new password for any request submission.	

For any online service request citizens would fill up their details in the web page shown on screen after selecting the specific department along with attaching the required supporting documents. System would generate a receipt number for each request submitted by citizen, which would be displayed on screen after submission of the request and also the details of the request would be sent on the registered email-id of citizen. Also an intimation of acceptance of the request would be sent on his/her mobile no as an SMS. For CCC operator system would ask for all citizen details at the initial instance as mentioned in the Functional Requirement above. (Point No. 6), so the email would be sent on the citizen email id and also an intimation would be sent to citizens mobile no.

- Reliability
    - Disclaimers, privacy and security policies, terms and conditions and copyright information to encourage people to use e-government services and information
- Profile Management:
    - Enable registered users to manage their accounts and profiles and as appropriate
- Security
    - Based on ISO 27001/BS 7799 standards, user access to the system mustbe through a single sign on process, which should involve specification of a user Identification, a password and the applications displayed must be as per the user profile and authority. The system should allow user to change his/her password based on a given time frame as well as give the user the option to change his password at any time. The system should disable the Userprofile after five unsuccessful log-on attempts. The system should be able to log successful and failed attempts to the system.
    - This section highlights the security architecture proposed for the e- Municipality system –

A. General Requirements

i. Information, hardware and software would be secured to both internal and external parties (such as through password encryption).

ii. The security measures adopted should be of wide range and of high quality, to create confidence in the systems security and integrity. The system should be protected against deliberate or accidental misuse that might cause a loss of confidence in it or loss or inconvenience to one or more of its users.

iii. System level and application level authentication between portal and between applications within portal, if any, to ensure against security attacks

iv. The application system would strictly be password protected and access to different modules would be role specific

v. Audit trails would be provided to allow the activities of users to be monitored.

vi. For the system, security must be available at Functional level, User group/class level, Menu level and Transaction type level. The following

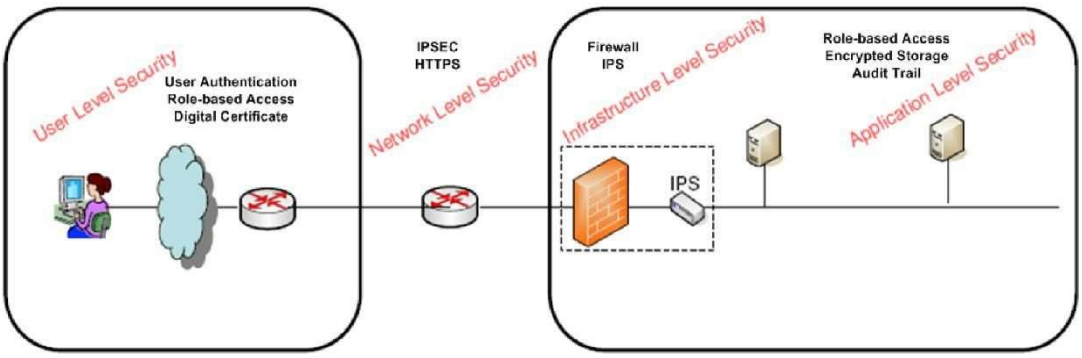

figure depicts the hardware level security at Data Center.

vii. There should be four levels of security considerations as described below: -

a. Key Security Considerations at the User level:

(i) User authentication

(ii) Role based access to services, transactions and data

b. Key Security Considerations at the Network/ Transport level:

(i) Network Link Encryption (IPSEC)

(ii) Encrypted HTTP session using SSL (HTTPS)

c. Key Security Consideration at the Infrastructure Level:

(i) Firewall to filter unauthorized sessions/traffic

(ii) Intrusion Prevention S y s t e m to detect/prevent unauthorized activities/sessions

d. Key Security Considerations at the Application & Database level:

(i) Secure storage of user credentials

(ii) Server–to-Server communication encryption

(iii) Secured/ encrypted storage of data/ data elements in the Database & DB Backups

(iv) Comprehensive logging & audit trail of sessions and transactions

5.1.3.2.1 Security Services for CCC solution

The security services will over the user profile management, authentication and authorization aspects of security control. This is an application framework service that will be availed by any government interfaces and applications accessing the overall framework. This service

run across all the layers since service components from different layers will interact with the security components. All public contents should be made available to all users without authentication. The service will authenticate users and allows access to other features of the framework for which the user is entitled to.

The security service will provide the following security control features –

- User Registration & User Profile Management – This service will allow system administrator of the application software, various govt. agencies to register and create user profiles for users who will access the system.
- User Authentication – This security service will validate the identity of the users against specific security credentials. This service will be realized using underlying HTTP Server and directory service features, which adds a comprehensive set of Web single sign-on services, and extends them further with centralized user provisioning that is available in any open LDAP, version 3-compliant directory service. End users logging on to the interface will be authenticated against the user name / password credentials.
- User Authorization - Users, groups, roles and security policies will be defined to prevent unauthorized access to specific government services.
- The systems implemented for project should be highly secure, considering that it is intended to handle sensitive data relating to the citizens of the State. The overarching security considerations are described below.
    - ✓ The security services used to protect the solution shall include: Identification, Authentication, Access Control, Administration, Audit and support for industry specific 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
    - ✓ Security for Mobile Application standards should be followed
    - ✓ The solution should use Captcha based login authenticated for users, to address Denial of service, Brut force attack etc.
- Security of Application and the data contained therein is paramount for the success of this Project. Hence, the SI should take adequate security measures to ensure confidentiality, integrity and availability of the information.

- ✓ The proposed solution should include design and implementation of a comprehensive IS security policy in line with ISO 27001 standards to comply with the security requirements mentioned in this section. All the necessary procedures / infrastructure / technology required to ensure compliance with IS security policy should be established by the SI and should be approved by authority before they are implemented. The IS Policy shall include all aspects such as physical and environmental security, human resources security, backup and recovery, access control, incident management, business continuity management etc.
- ✓ The designed IS policy is not in conflict with the security policy of the State Data Centre where the infrastructure would be hosted.
- ✓ The proposed solution should ensure proper logical access security of all the information Assets
- ✓ The proposed solution should be able to classify information assets according to criticality of the information asset.
- ✓ The proposed solution should provide security including identification, authentication, authorization, access control, administration and audit and support for industry standard protocols
- ✓ The proposed solution should have a security architecture which adheres to the security standards and guidelines such as
  - i. ISO 27001
  - ii. Information security standards framework and guidelines standards under eGovernance standards (http://egovstandards.gov.in)
  - iii. Information security guidelines as published by Data Security Council of India (DSCI)
  - iv. Guidelines for Web Server Security, Security IIS 6.00 Web-Server, Auditing and Logging as recommended by CERT-In (www.cert-in.org.in)
  - v. System shall comply with IT Act 2000 & subsequent amendments.
- ✓ The proposed solution should support the below Integration security standards:
  - i. Authentication
  - ii. Authorization
  - iii. Encryption
  - iv. Secure Conversation
  - v. Non-repudiation
  - vi. XML Firewalls
  - vii. Security standards support
  - viii. WS-Security 1.0
  - ix. WS-Trust 1.2
  - x. WS-Secure Conversations 1.2
  - xi. WS-Basic Security Profile
- ✓ The proposed solution should be a multi-layered detailed security system covering the overall solution needs having the following features:
  - i. Layers of firewall
  - ii. Network IPS
  - iii. Enterprise-wide Antivirus solution

iv. Information and incident management solution for complete State landscape

v. Two factor authentications for all administrators i.e. system administrators, network administrators, database administrators.

vi. Audit Log Analysis

- ✓ The SI must ensure that the security solution provided must integrate with the overall system architecture proposed
- ✓ The proposed solution should facilitate system audit for all the information assets to establish detective controls. The SI is required to facilitate this by producing and maintaining system audit logs for a period agreed to with authority
- ✓ The proposed solution should ensure that data, especially those pertaining to registration process, transaction process as well as the data that is stored at various points is appropriately secured as per minimum standard 128 Bit AES/3DES encryption.
- ✓ The proposed solution should provide database security mechanism at core level of the database, so that the options and additions to the database confirm the security policy of GoTN/GoI guidelines.
- ✓ The proposed solution should support native optional database level encryption on the table columns, table spaces or backups.
- ✓ The database of the proposed solution should provide option for secured data storage for historic data changes for compliance and tracking the changes.
- ✓ The proposed solution should be able to ensure the integrity of the system from accidental or malicious damage to data
- ✓ The proposed solution should be able to check the authenticity of the data entering the system
- ✓ The proposed solution should be able to generate a report on all "Authorization Failure" messages per user ID
- ✓ The proposed solution should be able to monitor the IP address of the system from where a request is received.
- ✓ The proposed solution should be able to differentiate between the systems supplied as part of e-District project & other projects
- ✓ Retention periods, archival policies and read-only restrictions must be strictly enforceable on all logs maintained in the system
- ✓ The proposed solution should provide ability to monitor, proactively identify and shutdown the following types of incidents through different modes of communication (email, SMS, phone call, dashboard etc):
    - Pharming
    - Trojan
    - Domains (old/new) similar to Government of West Bengal etc.

- ✓ The proposed solution should be able to monitor security and intrusions into the system and take necessary preventive and corrective actions.
- ✓ The proposed solution should have the option to be configured to generate audit- trails in and detailed auditing reports
- ✓ The proposed solution must provide ACL objects and a security model that can be configured for enforcement of user rights
- ✓ The proposed solution should be designed to provide for a well-designed security of physical and digital assets, data and network security, backup and recovery and disaster recovery system.
- ✓ The proposed solution should have tamper proof data storage to prevent unauthorized data tampering
- ✓ The proposed solution should have a Business Continuity Plan and a Disaster Recovery Plan prepared and implemented by the SI before commencement of the operations. Robust backup procedures to be established for the same.

- ✓ Password Requirement
  The proposed solution should allow the State to define password policies. The minimum password policies to be defined are:
  - Minimum/ Maximum password length
  - Alpha numeric combination of password
  - Compulsory use of special characters
  - Minimum passwordage
  - Password expiryperiod
  - Repeat passwords etc.
- ✓ The proposed solution should be able to automatically check the passwords with the password policy, which can be customized by authority
- ✓ The proposed solution should enforce changing of the default password set by the system (at the time of creation of user ID) when the user first logs on to the system. The proposed solution should enforce all password policies as defined at the time of first change and thereafter.
- ✓ The proposed solution should store User ID's and passwords in an encrypted format. Passwords must be encrypted using MD5 hash algorithm or equivalent (SI must provide details)
- ✓ The proposed solution should be capable of encrypting the password / other sensitive data during data transmission
- ✓ The proposed solution should ensure that the user web access shall be through SSL (https) only for all level of communication for providing higher level of security.

5.1.3.2.1.1 Intrusion Prevention System (IPS)

Intrusion Prevention System (IPS) on application and database server can stop well-known attacks, new/ unknown attacks and encrypted-tunnel based attacks that target the application/ database servers. The following are the benefits of using IPS:

i. IPS monitors system activity and notifies administrators when it suspects suspicious activity

ii. IPS blocks suspicious executable or processes from running by default

iii. Allows System Administrators to determine which traffic and applications to permit and block

iv. Protects Files, Registry and Computer Settings of Operating System and Application Integrity Check

v. Reduces the risk of downtime caused by malware, spyware and other malicious content and helps to keep your critical application up and running

vi. Helps to log all relevant events to help with compliance, reporting and investigations.

5.1.3.2.1.1.1 Antivirus & Anti-Spam

The following activities need to be performed.

i. Monitor the Antivirus tool updated on daily basis and ensure that the latest patches are updated in all thesystems.

ii. Monitor the security console and clean the virus from the systems, which are affected and if necessary, isolate those systems to avoid further spreading of viruses.

iii. Alert users on new virus breakouts based on the info received from CERT-IN

iv. Install, configure and test latest security patches.

v. Troubleshoot and rectify all virus-related problems reported and also escalate if not rectified by the Antivirustool.

vi. Monitor the client security tools and adhere to the security policies as finalized with the Authority.

vii. Monitoring the efficiency and effectiveness of the Anti-Virustool.

viii. Registering and updating the Anti-Virus tool on the server and the clients periodically

ix. Providing feedback on any new viruses detected and alarm/alert the protection systems

- Security techniques and measures provide security measures to protect information belonging to the Portal and the entities (departments) from unauthorized access, modification, or deletion.
- Monitor, log and audit security incidents with date/timestamping.
- Maintain and ensure data integrity and visitors' confidentiality and privacy.
- Implement a password complexity, automatic blocking of user logins after given number of unsuccessful login attempts, controlled access to content stored on the portal and logging of security incidents.

- Provide a facility to securely store critical data within the transaction database so that administrators don't have access to items such as transaction information, passwords, user profiles and other critical items.
- Provide a facility to perform password management functions including: controlled password expirations, minimum password lengths, and enforcement of alphanumeric password standards, password history logging, and user lockout from failed login attempts
- Authenticity of the sender of each service request to be established by login- password as specified at the time of registration by the sender

5.1.3.2.2 Unified Messaging system:

- **SMS**: The Web-Portal shall have facility to send SMS to Mobile number of a citizen which was provided while requesting certain information or service. The SMS shall be auto-generated based on the information or service requested on occurrence of its change of status. All the application needs to be integrated with SMS gateway.
- **E-mail:** The Web-Portal shall have facility to send e-mails to
  - The e-mail address of a citizen, provided while requesting certain information or service.
  - The e-mail shall be auto-generated based on the information or service requested on occurrence of its change of status.
  - Reporting Officials maintaining the hierarchy, in cases of delay (as per the Citizens' Charter) in providing services.

5.1.3.2.3 Workflow Management System as an Application:

Workflow Management System would serve as an integrated functionality across all the departmental modules to receive and process the request / applications received via any of the service delivery channels. Each request/application should be processed via workflow engine mechanism. I.e. each of the application should be routed to the respective department official's activity dashboard. WMS should also have a facility of delegation of powers.

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Following functionalities should also be part of the integrated applications proposed by a successful bidder:

1) **Role based Access Management System** – Proposed User management module should have following categories of Users:
   a. Super User – IT Cell, IT Manager, Municipal Commissioner
   b. Master Admin – IT cell
   c. Admin – IT Manager, HoD of a department

d. Regular / Anonymous Users – Employees from various departments of Authority, Citizens requesting/applying for anyservice/information.

Available information and user options will vary on all pages throughout the system depending on privileges assigned to the users.

2) **Admin Section** – This section should be privilege restricted and should have the facility to:

a. Create, modify delete Users and Groups

b. Assign and remove privileges(modules, sub-modules, workflow & other) to individuals and groups

c. Administer restricted sections / modules / Webpages

3) Content Management

- System Integrator would be responsible for maintaining and uploading of content on the web portal for implementation phase and also under operation and maintenance period of 5 years.
- Necessary approval from the associated department needs to be taken by the System Integrator for uploading and maintaining of CMS (Content Management System).

3.1.3.3 Functional Requirements – General

- The system requires continuous availability (24 * 7)
- The system shall be designed in such a way so as to ensure that the loss of data is minimized due to network 'drop outs'. Automatic refreshing of data at specified time intervals. The information shall be refreshed from the database and shall not require user intervention
- System should have an online help capability, which should be customizable. Should have a facility for online learning and collaboration
- All reports should be query based and should have options like departments zones, wards, employees, from date, to date, etc.
- Authority Users will access the system using Ethernet LAN / Lease Line / RF / Internet

5.1.3.3.1.1 Security Requirement for Portal

This section elaborates specific security requirements which would have to be provided in the Web portal.

i. *Effective password management controls*: The portal solution would have the ability to perform password management functions including:
   a. Controlled password expirations,
   b. Forced password change with optional grace logins,
   c. Minimum password lengths (eight characters),
   d. Alphanumeric password standards,
   e. Minimum number of numeric characters,
   f. Non-dictionary words,
   g. Password history logging and user lockout from failed login attempts.

ii. *Access control to information*: The security solution would be facilitating access controls for specific users to only certain resources/services in the portal and at the same time system must provide single sign-on to all functional areas.

iii. *Scalable and portable solution*: The security solution would provide scalable access services for the Portal, including scalability in terms of number of users, user groups, resources, and access control policies.

iv. *Secure Communication over the network*: The portal should support the exchange of data through secure channels of communication protected by standards such as the SSL protocol. Such facility should provide the following functionality, at a minimum:
   a. *Confidentiality of communication*: Encryption of all messages between client and server
   b. *Authenticity:* Digital certificates to authenticate all messages between client and server, confirming the identities of messages/transactions
   c. *Integrity:* Message Authentication Codes (MACs) provide integrity protection that allows recognizing any manipulation of exchanged messages.
   d. Secure communication between the user and the portal with SSL and encrypted logon information using algorithms with strong key lengths.

v. *Uninterrupted security services /automated load balancing to backup services:* The security solution should provide for load balancing/high- availability to enable a fully scalable and available solution. It should enable continued service on failure of one or more of its component parts.

vi. *Secure storage of critical items:* The security solution would provide for the ability to securely store critical data within the LDAP or other user directory structure or any user related databases so that database

administrators or any unauthorized users do not have access to items such as transaction information, passwords, user profiles and other critical items.

vii. *Detailed session management abilities*: The security solution would provide for session settings such as idle or max session time-outs, concurrent sessions and other session control settings.

viii. *Web Access Filtering*

a. The portal security solution should examine all traffic to all resources of the solution and all access attempts to the portal or directly to any resource managed/access by the portal, should be intercepted by the security solution, and examined for authentication and authorization requirements defined for the resource.

b. At the same time, the performance overhead of examining all web-traffic and performing the authentication and authorization requests should not become the bottleneck in the service delivery process and should not impact on the performance of the portal solution.

ix. *Security Monitoring*: The security solution implemented for portal must be capable of comprehensive logging of the transactions and access attempts to the resources/applications through the portal. It should be capable of logging transaction history, unauthorized access attempts, and attempts to login that fail. It should also be capable of notifying appropriate Authority officials of any suspicious activity.

x. *Security- User profiles*:

a. Initially the citizen would have to create his profile by Registering at the web portal by specifying the details as asked in the Registration form. Citizen also needs to create profile and transaction password at the time of registration.

b. For the first login by a user at CCC/Authority offices, the system should prompt the user to change his password.

c. When a user logs-in, the system should show him the date & time of last login

d. The System must restrict user access based on the privileges assigned to the user

e. The system should maintain a log of all the activities carried out by a user along with a date and time stamp.

f. The System must maintain a log of all activities carried out by an administrator.

xi. *Other Security Services*:

a. The sensitive and confidential information and documents of the users must be stored in an encrypted format in the database.

b. The system should support 128-bit encryption for transmission of the data over the Internet.

c. All the systems in solution network should run most up-to-date anti-virus software to avoid malicious programs to cause damage to the systems

d. Any access to the end users to database should only be via application/portal authorization

e. Physical security for the solution should address securing all information assets from physical access by unauthorized personnel. For example, the data center server infrastructure should not be physically accessible by anyone other than the persons responsible for on-site maintenance of thesystems

f. The technology solution should comply with ISO27001 standards. Security certification process should include audit of network, server and application security mechanisms.

xii. *Auditing features and Requirements*: The security solution for portal must provide the capability to track and monitor successful and unsuccessful transactions with the portal. Accountability for transactions must be tied to specific users. The architecture/systems should facilitate audit of all significant security events including authentication, accessing of services and security administration. The auditing capabilities need to be built into various layers of the portal infrastructure including Application Software, Operating System, Database, Network, Firewall etc.

a. SI would have to implement Intrusion Prevention Systems (IPS) at all the critical network points, both internal and external, for monitoring and addressing the unauthorized access attempts and the malicious activities in the network.

b. Information and communications systems handling sensitive information must log all security relevant events. Examples of security relevant events include, but are not limitedto:

i. attempts to guess passwords,

ii. attempts to use privileges that have not beenauthorized,

iii. modifications to production application software,

iv. modifications to operating systems,

v. changes to user privileges, and

vi. changes to logging subsystems

c. Detailed audit trail of transactions performed in the system (approvals, rejections, renewals etc.) which should capture the details of individuals performing the transactions, date & time stamp etc.

d. Stringent security measures should be implemented surrounding the audit data to ensure that audit records are not modified, deleted, etc.

e. The web portal should facilitate reporting facilities in a simple and readable manner for the Authority officials to review audit

trails for the transactions occurring in the system.

xiii. *Security Requirements for Portal Databases*: Database is the critical components of the portal, which stores the entire data related to Services & functions. Following outlines the security requirements of the database, which at a minimum (included but not limited to) should be implemented.

a. The database for portal should support and implement encryption capabilities while transferring data over networks, and ability to encrypt data stored in the database at the column level

b. Comprehensive auditing for inserts/ deletes/ updates / selects to quickly spot and respond to security breaches.

c. The critical data and the related documents stored in the portal database should be stored in encrypted format.

5.1.3.3.2 Security & Authentication Module (SAM)

Mobile governance platform need to support multi-level security and authentication process. Departments may choose to use one or more methods to authenticate the user and verify the transaction authenticity and consistency. The module is responsible for authenticating the user as defined by the various transition types. The module will also verify the mobile#, check for the registration of the user, verify the PIN, Biometric, One-Time-Password, check for consistency of the message, check for repeat attack on the server.

The SAM must have the ability to interact with external systems to carry out necessary security and authentication checks as required and defined by the system (ex. Verify biometric based on UID by calling UID's Authentication API). The SAM may also be required to carry out encryption and decryption of the information by calling external API. Security module will also be responsible for checking various roles and permission associated with the activity.

5.1.3.3.3 Transaction Management

This is the core transaction management module of the platform, all the messages will be routed through transaction management platform for further processing, transaction management will interact with external systems for verification & presentment of the information, will interact with payment module for handing over the information to for payment processing, will interact with department / merchant module, customer/citizen profile module and other modules for various types of verifications. Transaction management will also be responsible for calling business rules API for checking various business rules as well as with service charges module for calculation of transaction charges prior to sending the transaction for further processing.

5.1.3.3.4 Business Rules

The platform needs to support a comprehensive, configurable business rules engine to cater to various business requirements. The transaction manager will interact with business rules engine before processing the transaction. The business rules module needs to support intra business object as well as inter-business object rules.

Setting up of business rules, reporting on failed / passed business rules and transactions as well as analysis to measure the effectiveness of business rules by effectively integrating it with transaction management and other modules of the MSDG platform need to be essential part of the business rule module.

The business rules engine may also need to calculate convenience fee for payment or any other type of transactions.

The business rules engine may also need to have ability to post the transactions in real time or in batch with ability to detect and retry posting.

5.1.3.3.5 System & Transaction Alerting Module

The system should have the ability to alert other system components, users, administrators upon occurrence of certain activity or event, the module should have the ability to define rules to detect the occurrences and provide alerting to various types of users.

Few examples of alerting are given below

A. Upon reaching a certain transaction milestone – send informational message to the authorities

B. Alert the system administrator as well as program management unit when the transaction failure rate goes up by X%

C. Alert system administrator as well as PMU upon sudden spike or decline in transaction activity

D. Alert system administrator on failure of a system component or upon abnormal behavior of a certain system component

E. Real-time / batch messaging (SMS, Outbound dialer) to inform the requestor of the service upon resumption of the service / upon fixing any issues encountered during service fulfillment.

5.1.3.3.6 Transaction Logging & Audit Control Module

The system need to support extensive, configurable, traceable transaction logging & audit control.
Transaction logging involves life-cycle details of the transaction with information about each and every process step. The module should have the ability to configure not logging of certain data elements (ex. Credit Card details, mPIN, Biometric details) as well as the ability to turn-off or turn-on either partial or complete logging. The module need to log all the API calls to the external system with reference data and date-time stamp as well as all the API calls into the system with reference data and date-time stamp. Another aspect of transaction logging is error detection, logging and propagation to the appropriate level after mapping the external error message to the platform specific error message to effectively communicate to the citizen. A graphical user interface to show the life cycle of the transaction with the necessary details is a necessary requirement of the logging module.
The audit control module serves the purpose of tracking any changes to the system configurations. The module needs to have ability to configure various elements of the system like data base tables, UI, functional flow, parameters at various levels. The system need to provide user interface to setup the audit control parameters as well as generate the necessary reports to monitor and track the changes to the system configuration.

5.1.3.3.7 Marketing & Promotions Module

An integrated mobile governance platform provides great opportunity for various Government departments as well as businesses to promote their services and reach out to a significant portion of the population in an effective manner. Government departments spend significant amount of resources to provide the information to the citizen – this includes education, awareness building and promotions. The system shall have the ability to integrate with the 3rd party / open source module and deliver the message across all the supported modes of communications (channels). The module shall have the ability to send information / messages to the citizen, business, government employees and agencies as part of the transaction (i.e. part of SMS receipt for payment transaction, part of status update from

department, during IVR or outbound call, as part of mobile web etc…) or as a separate totally independent process as required by the government.

5.1.3.3.8 **Device management**

Mobile Device Management (MDM) software secures, monitors, manages and supports mobile devices deployed across mobile operators, service providers and enterprises. MDM functionality typically includes over-the-air distribution of applications, data and configuration settings for all types of mobile devices, including mobile phones, smartphones, tablet computers, ruggedized mobile computers, mobile printers, mobile POS devices, etc. This applies to both company-owned and employee-owned (BYOD) devices across the enterprise or mobile devices owned by consumers.

By controlling and protecting the data and configuration settings for all mobile devices in the network, MDM can reduce support costs and business risks. The intent of MDM is to optimize the functionality and security of a mobile communications network while minimizing cost and downtime

The Mobile Governance initiative plans to empower the government departments and agencies with application developed on mobile device to bring in efficiency and transparency in the Government processes.

As these mobile applications are going to be equipped with various features to capture, retrieve citizen information and process citizen payments it is important to have adequate level of security and privacy built into the application.

The responsibility of certifying and enabling these applications will be with the individual departments. These departments will also be required to identify the employees / agencies

for giving access to these applications. The device management service may need to provide LBS (Location Based Service) wherever required.
A number of security and privacy issues need to be addressed for effective implementation of G2G services on mobile at the departmental level.

The issues listed below are limited to enablement of G2G (Government to Government) and related services on mobile to the government employees and authorized agencies of the department.

A. Lost Device

B. Unauthorized access to device or application

C. Inappropriate use of the device or application

D. Change in the employee / agency status (transfer, termination, change of responsibility within department etc…)

E. Changes in the procedures and government rules / laws

The above issues can be effectively addressed by implementing the following features in MDM

A. Ability to uniquely identify the device assigned to an employee

B. Ability to assign functional role to enable business functions and data based on delegation model

C. Ability to encrypt the information stored in the device and during transit

D. Ability to provide secure access to the application

E. Ability to remotely locate the device

F. Ability to identify abnormal use of the application

G. Ability to prevent use by unauthorized person - by way of secure access, location control, usage control etc…

H. Ability to remotely erase the data from the device in case of lost device or inappropriate or suspicious usage of the device or application

I. Ability to remotely lock the application and / or device from any use

J. The requirements related to access to data, ability to modify data will need to be implemented by the departments by providing appropriate APIs and user level data access controls, logging and auditing mechanisms.

The MDM module must expose APIs for the individual department applications to call these APIs. As the individual applications may be developed by a 3rd party vendor, MSP is expected to provide clear guidelines and API calls to MDM enable the application on the MSDG platform.

5.1.3.3.9 Service Management

One of the important aspects of mobile service delivery platform is effectiveness in m- enabling various departments and businesses. Service management module helps enable various department services on mobile, the module should provide a self-service portal for administrators and departments to manage services, enable / disable various channels, view status of services. Some of the key features of this module are

A. On-board the department / business

B. Department / Business profile management

C. Service Definition including channels, type of service (informational, payment, data capture)

D. Integration with campaign management module

E. List of services and status of each service

This module needs to integrate effectively with the integration module which is responsible for exposing the APIs for departments to consume. The APIs should use SOAP or REST protocol and the data exchange using

XML. The service management module mustsupport the ability to configure various messages (SMS, USSD, Voice, http/ https based) to be delivered to the recipient and the departments should have the ability to configure messages in the system.

5.1.3.3.10 Remote Application Monitoring (RAM)

Mobile service delivery platform is going to have multiple loosely coupled modules to facilitate scalability and management of the platform. The platform needs to have high availability and load balancing built into it. Apart from the core modules of the platform, the platform would be integrated with various external entities like payment gateways, banks, telecom operators, SMS aggregators and departments as well as businesses.

The real time monitoring and management of the MSDG platform using single portal is key to provide uninterrupted and high available service to the citizen and businesses in Newtown. The MSDG platform needs to be monitored for effective measurement of the SLA, the responsibility of monitoring and measuring SLA shall be with theMSP.

The Bidder is required to provide necessary software and support for effective monitoringof the platform.

5.1.3.3.11 Self-service management

The platform needs to provide self-service management facility to departments, businesses, program management unit and administrators to manage various activities of the mobile governance platform. The entire process need to follow role-based delegation model. Various activities like on-boarding the department and services, management of business rules, mobile device management services, transactional reports etc… need to be serviced using a user friendly interface. As much as possible a template based approach should be used by MSP to enable services across variouschannels.

It is important to note here that anything that is available via user interface (Mobile Web, IVR, USSD etc…) shall be available as part of programmatic interface (API). The programmatic interface shall help enable newer technologies with minimum of re-work.

5.1.3.3.12 MIS Reporting and Dashboard

The platform need to provide extensive parameterized reporting facility for both department users and administrators to run various reports from time to time.

The reporting module need to have the capability to configure event based or time based reports. These reports need to be delivered via multiple channels like push reports in email, on-demand through browser, downloadable in XLS or XML format, tablets, iPad and other similar technologies, mobile device. The reporting module needs to support various formats including HTML, XML, PDF, XLS, and CSV.

The multi-dimensional report with drill-down capability will need to support dimensions like departments, time, district, city, taluka, service category, channels.

Integration with map and display of real time activity on the map in the form of points on the map, detailed location details, directions and other information useful for display of executive dashboard needs to be supported.

A detailed list of parameters for transactional reports and dimensions for the dashboard reports would be made available during the implementation phase. The reporting and dashboard module need to have the capability to configure event based or time based reports, need to provide tools and techniques to define various dimensions and parameters for the report based on the various business objects supported by the system.

5.1.3.3.13 Application Integration Module

The mobile governance platform needs to provide well defined, open standards based, well published APIs for various entities (departments, business, developer community) to consume and integrate with the platform. In order for the mobile governance platform to enable services, the platform needs to be integrated with various department's IT services (two way integration where mobile governance platform calls department API and department API calls platform API), the information exchange can be either push or pull based depending on the need. The application integration layer should provide a step by step process for the departments to integrate with the mobile governance APIs to M-enable their services. Similarly, the platform need to provide a step by step process for the departments to develop standards based open API. At a broad level the platform shall have Pre-Processing API, Post-Processing API and Business Logic API (which may be broken into business logic and payment API wherever required). Apart from open standards based web-services, the integration module should support data exchange based on XLS, XML, delimited text and other acceptable and widely used formats. The integration module should also provide a on line and batch mode integration facility. Integration with popular social networking sites like Facebook, Twitter and Google+ using the published API as well as integration with mail server would be considered as desirable features. Any new service enabled on the platform will need to be notified/popularized via Twitter, Facebook, Google+ or any other social media platform.

The integration module will need to be integrated with state and national portal / platform.

5.1.3.3.14 Mobile Application Service (MAS) enabler

The mobile governance platform is expected to act as a catalyst for innovation in Newtown. As the platform provides an out of the box integration with telecom operators and various mobile channels as well as the payment instruments including operator billing, the mobile application service providers can use the facility to enable application services on the platform. The Mobile application service enabler module need to provide the necessary deployment, certification, provisioning and management features for the MAS providers to publish their application. The module needs to provide support for enabling services across channels. MAS module should also expose a payment service API (preferably one API for all payment instruments supported) for the mobile application service providers to integrate.

Apart from the payment instruments enabled for payment services, the MAS module need to provide integration with operator billing as well as enabling MAS service upon collection of cash.

5.1.3.3.15 Functional and Data Security

The mobile governance platform needs to provide comprehensive functional and data security. The functional security can be achieved by enabling role and permissions based delegation model. The data security can be achieved by business logic or by way virtualization of the data. Both functional security and data security need to be configurable modules of mobile governance platform. The platform may need to import the data from external systems (department systems), store it and make it available for various other services.

5.1.3.3.16 Usage Profile

The users of the mobile governance service should be able to detect and use the service in an effective manner. The platform should have the ability to group and present the service intelligently. The grouping of services need to support various parameters like Zones, Category of Service, Department, Usage, Awareness need and many such parameters. The platform should look at the usage at an aggregate as well as at an individual level. The presentation of these services across channels (modes of communications) may need to be monitored, managed and altered depending on various parameters as decided by NKGSCCL in consultation with various departments, the usage profile module should have the ability to configure, detect and act on these configurationparameters.

4.1.3.4 Functional Requirement Specification for compliances

Category	Feature Description	Compliant (Yes / No)
Product Feature	Unified Communication Module	
	Support for Single or Bulk message (SMS) Push in real time and batch mode to the recipient	
Category	**Feature Description**	
	Ability to integrate with IVR technology to provide interactive voice recording based system to the recipient (IVR includes inbound voice, outbound, missed call)	
	Ability to process incoming SMS transaction	
	Support for USSD based communication, the USSD communication may be initiated from server/network or by citizen	
	Support for Mobile Web / WAP based application communication (http, https or any other widely industry standard communication mode)	

	Support for Smart Client based application communication (http, https or encrypted SMS, other widely used industry standard communication protocol)	
	Support for SMPP, ISO 8583, http, https based protocol	
	Support for outbound dialer based (voice) communication to the recipient	
Product Feature	Transaction Management	
	Support for end-to-end transaction management system	
	Support for extensive, configurable transaction logging	
	Support for payment and non-payment-based transactions	
	Support to track and trace the transaction end-to-end along with time- stamp and time taken at every step	
	Support for routing of the transaction to external system for further processing	
	Support for processing the transaction based on the response from external system	
	Support for complete transaction consistency and ability to reverse the transaction if required	
	Ability to add pre-processing and post-processing logic for services	
	Ability to connect to external system for pre-processing and post- processing logic	
Category	**Feature Description**	
	Ability to post the payment in real-time and batch mode	
	Ability to reverse the transaction in case of failure in one of the steps (the reversal logic or step to be determined by the service)	
Product Feature	Business Rules	
	Ability to define business rules based on business object attributes	
	Ability to validate transaction based on business rules and take necessary action	
	Ability to detect abnormal transactions and report / alert one or more users	
Product Feature	Messaging / Alerting	
	Configurable method to send communication upon occurance of an event (SMS, Outbound dialer - voice, USSD, notification in the application)	
	Support to customize the message for a specific department, event , transaction type or any other business object that is identified by Govt of West Bengal for effective communication to various entities	
	Support to alert various stakeholders upon happening of a certain event	
	- for example, availability of new service or feature	

	Support for creating a list for sending the message out - the list creation need to be based on some business logic - the system should have the ability to configure the rules to extract the list in various formats (in DB table, XLS, XML, text or any other industry standard format)	
	Support for inserting 'communication message' at the end of the transaction receipt	
	Ability to configure 'Communication Message' based on business rules , example of a communication message - Use CFL bulbs to save energy - to be inserted after bill information in the SMS	

Category	Feature Description	
Product Feature	Communication Protocol Support	
	Support for http, https, ISO 8583, Web-Services, XML and other industry standard communication protocols	
	Flexibility to support a communication protocol which is not yet supported on the platform	
Product Feature	Device Support	
	Ability to support any mobile device to enable mobile governance features	
	Support to enable services and features based on device characteristics	
Product Feature	Language Support	
	Support for regional language (Bengali) along with english - the support need to be available at a minimum on voice, SMS, USSD, Mobile Web & Smart Client - The platform should have the ability, any limitation due to external factors like telecom operator's inability to support the feature, limitations of the mobile device etc need to be explicitly mentioned in the vendor comment	
	Ability to support additional languages as desired by NKGSCCL, Govt. of West Bengal	
Product Feature	Mobile Web	
	Mobile Governance portal need to work across all the available devices in a seamless manner	
	Ability to detect device characteristics and provision the content in the best possible manner	
	Local language support on the devices supporting the local language	

Category	Feature Description	
Product Feature	Platform Capabilities	

	Support for developing application across devices and ability to support new devices and device faimilies	
	Support to configure services to be enabled across multiple channels (communication modes)	
	Support to enable / disable services based on business rules	
	Support for enabling services based on the backend workflow definition without the need to re-download the application	
	Support for automatic detection of new service	
	Support for auto-upgrade of the client application	
	Support for manual upgrade of the client application	
	Support for user to use all the available communication modes (channels) to access the service	
	Templates with well defined steps (manual and automated) to enable services of various categories	
	Ability to deploy and manage multiple instances of the same service	
	Support for load balancing of different services	
	Support for hot patching	
	Support for high availability of services and platform	
	Support for loosely coupled application	
	Support for asynchronous processing of the transactions	
Product Feature	Security	
	Support for 2-factor authentication	
	Support for multiple authentication factors (PIN, OTP, static password, biometric, profile question, department specific information etc…)	
	Support for calling external service to authenticate the user	

Category	**Feature Description**	
	Support to authenticate user based on only mobile #	
	Support for end-to-end encryption (Mobile Device to MSDG Platform)	
	The platform should be able to detect man-in-the middle and repeat attacks wherever possible and desired by business	
	Support for encryption of data in database	
	Ability to log /no-log sensitive information to meet regulatory and NKGSCCL's security and privacy guidelines	
Product Feature	Profile	
	Support for Service provisioning based on user preferences	
	Support for service provisioning based on business rules like usage, timeline,location etc	

	Support for service provisioning based on default logic as determined by NKGSCCL or Department	
	Support to subscribe / unsubscribe to the service	
	Support to receive service in the language of choice	
	Ability to select language of choice as default language	
	Ability to control service list and display sequence at the various levels (user, user group, location etc…)	
Product Feature	Payment	
	Support for http, https based integration with various payment gateways, banks, financial institutions	
	Support for ISO 8583 based integration with payment gateways and banks, payment gateways and financial institutions	
	Support for Card based payments	
	Support for NPCI - IMPS payment	
	Support for Account based payment	

Category	**Feature Description**	
	Support for Cash Card, Semi-Closed Wallet and other wallet based payment	
	Support for agent based payment (Agent accepts cash and uses his financial instrument to process payment)	
	Support for integration with Telecom Operator's billing system	
	Ability to route the transaction to the appropriate payment gateway based on business logic	
	Ability to seamlessly connect to 3rd party payment gateway to process payment directly on their platform (includes platform, 3rd party application, 3rd party web page, 3rd party wap page or any other mechanism that is used in the industry)	
Product Feature	Compliance	
	Platform and service offerings should meet TRAI & DOT guidelines	
	Platform and service offering should meet RBI guidelines for payment	
Product Feature	Reconciliation	
	Ability to reverse transaction	
	Ability to generate failed / suspense transaction report and process it manually or automatically	
	Ability to query the status and re-process the transaction	
	Ability to track the transaction internally and also with external system by having common reference number	

Product Feature	Reporting	
	Support for generating transaction report based on user input parameters (date range, status of txn, dept, txn type etc…)	
	Support for summarized reports based on various dimensions and drill downs	
Category	**Feature Description**	
	Support for reconciliation report	
	Support for various report formats like PDF, XLS, XML, HTML	
	Ability to run reports on a periodic basis and send to the pre-defined set of users automatically	
	Ability to send report to email or to the mobile phone (SMS, out-bound call, notification in application)	
	Ability to create new reports using well defined templates	
Product Feature	Marketing & Promotions	
	Ability to configure marketing campaign with deals, communication for citizen	
	Ability to track the effectiveness of marketing campaign	
Product Feature	Mobile Device Management	
	Ability to uniquely identify the device assigned to an employee	
	Ability to assign functional role to enable business functions and data based on delegation model	
	Ability to encrypt the information stored in the device and during transit	
	Ability to provide secure access to the application	
	Ability to remotely locate the device	
	Ability to identify abnormal use of the application	
	Ability to prevent use by unauthorized person - by way of secure access, location control, usage control etc…	
	Ability to remotely erase the data from the device in case of lost device or inappropriate or suspicious usage of the device or application	
	Ability to remotely lock the application and / or device from any use	
Category	**Feature Description**	
Product Feature	Service On-Boarding	
	Ability to configure services across multiple channels	
	Ability to enable role based logic for services	
	Ability to define business rules for services at various levels of services (for example - service, service category, department or channel level)	

	Ability to enable or disable channels for a service, service category or department	
	User interface to manage the services , role based access to view and manage the services	
Product Feature	Remote Application Management	
	Ability to manage all the services running on the platform remotely	
	Well defined dashboard to view the health of the platform and service	
	Ability to send alert to various entities to alert failure or abnormal behaviour of service	
	Ability to provide uptime and downtime details	
	Ability to configure message for scheduled / unscheduled downtime and send communication to the concerned entities	
	Support for integration with SDC' remote application management platform	
Product Feature	Customer Support	
	Support for raising trouble ticket and managing the life-cycle of the ticket	
	Export / Import of the trouble ticket - Batch Mode	
	Web-Services to integrate with external system to pull trouble ticket or push the trouble ticket data or status	
	Escalation of trouble ticket and necessary alerting to various entities	
Category	**Feature Description**	
	Management Dashboard and drill-down into details	
Product Feature	Self-Service Portal	
	Ability to manage the platform setup and various functions through well defined user interface	
	Role based access to the Modules or UI	
	Support for role based delegation model for access to various business functions	
Performance / Scalability	Performance / Scalability	
	Provide documentary evidence of the ability of the database design to scale the DB from 5 TPS to 50 TPS.	
	Ability of the individual component to scale to 50 TPS and the documentary proof to show that there is no performance degradation due to increased load / transaction volume on the system	
	Ability of the platform as a whole to scale to 50 TPS and the documentary proof to show that there is no performance degradation due to increased load / transaction volume on the system	

	Documentary evidence on performance / scalability tests carried out on the platform	
	Detailed process and technology used for performance / scalability testing of the platform	
	Documentary evidence on how single point of failure is avoided by the platform architecture and in case there is a specific case of single point of failure due to technological or other constrains -describe the risk mitigation strategy	
Framework	Integration Support	
	Support for integration with Telecom Operator's prepaid system	
Category	**Feature Description**	
	Support for integration with Telecom Operator's Postpaid billing system	
	Support for integration with aggregator's utility bill payment system	
	Support for Open-Standards Web-Services based integrations with external entities	
	Support for batch mode integration with ability to process various data formats like XML, csv, text	
	Interaction with mail server to send and receive mail	
	Ability to process mail received in a pre-defined / structured format	
	Ability to send structured formatted mail	
	Support for extensive integration framework to process in batch and online mode, batch mode to support various file formats, support for picking up data from ftp/sftp server	
	Support for REST / SOAP based API	
	Support for XML data format	
	Support for integration template for various categories of services, departments should be able to pick from one of these templates based on their need, additional templates to be developed as and when need arises - the primary objective is to bring down the time required to on- board the services with minimum manual steps	
Framework	Architecture	
	Detailed architecture of the platform to demonstrate functional and technical capabilities of the solution	
	Detailed architecture of DR setup	
	Documentary proof on the ability of the platform to continue to function inspite of failure of one or more instances of the components (both internal or external) with scenarios	

5.1.3.5 Functional Requirement for Document Management System

1. All departments of GCC and employee should have an access of this module. The system should be linked with all Smart Governance applications where there is a

   functionality to upload while processing and submission of application. It should also aid users to refer any document related to that functional activity on the repository on which they are working.

2. The DMS will facilitate the system to maintain the details/report about, Document creation date, creator name, access rights, subject, description, department details etc. DMS should have capability of:
   - Categorization of documents in folders-subfolders
   - Document Version Management
   - Extensive document and folder level operation such as move / copy, email, download, delete
   - Repository should be format agnostic which can archive documents of any format
   - Indexing of the documents on user defined parameters
   - Association of the key words with the documents
   -

3. The system should have minimum of the following:
   - Assign unique id to every document uploaded
   - Have the facility to create, store, view and update the document.
   - Have the facility to assign the view and edit rights for existing document by the creator
   - Have the facility to scan upload the documents
   - Have the facility to index the submitted documents for referencing the file no and transactions
   - Store the index such that data can be easily converted into logical file/ set
   - Have the facility to store different pages of the document as a single set. It should assign the image no to the pages of the single document. However system should be able to retrieve the complete document as a single set.
   - Assign note and annotation to the uploaded document for further reference of any other documents if required
   - Allow the documents to be referenced to the concerned file number
   - Have the facility of archiving the document with time and date stamp
   - Have the facility to import and export email, print and encrypt the document
   - Have the facility to group the documents in a docket and unique id should be assigned to the docket
   - Have the facility to manage the version of the documents and dockets by means of time, user and date stamps
   - Allow the user to search information (within document) by keying keywords, and page no#.
   - Have the search facility to locate documents or Folders
   - Have the combined search facility on Profile, Indexed and Full Text
   - Have the facility to search document or folder profile information such as name, created, modified or accessed times, keywords, owner etc.
   - Support the view of thumbnails for the pages in the documents

   - Maintain extensive Audit-trails at user and folder levels.

- Maintain Audit trails on separate actions, and between specific date/times
- Document Repository for managing information
- Organizing documents into hierarchical storage like Folders and Subfolders for management and classification of information
- Provide easy filing and indexing for quick retrieval
- System should support the storing of document (Image & Metadata)
- Support for archiving a large number of file formats. The system should support all commonly used file formats as MSOffice, Acrobat, TIF, JPEG, GIF, BMP, etc.
- Provision for an integrated scanning engine with capability for centralized and decentralized Scanning & Document Capturing. The scanning solution should directly upload documents in Document management system.
- Association of the document with Workflow Management System
- Movement of the document based on selected parameters
- Provision to edit the document Metadata
- Versioning of the document
- Provision for marking comments
- Archival of data on pre-defined parameters
- Role based access to the documents
- Final Decision by the Decision Authority
- Should be platform independent and should support both Linux and Windows both with and without virtualization. It should support multiple databases i.e. MSSQL, Oracle and Postgre.
- The inbuilt image viewer shall support comprehensive annotation features like highlighting, marking text, underlining putting sticky notes on documents, and support for text and image stamps etc.
- Should include record management to manage lifecycle of documents through record retention, storage, retrieval and destruction policies and should be certified for record management standard like DoD 5015.02/ISO 15489.

Workflow Management System

- Movement of Proposals on various parameters
- Facility to mark the application to pre-defined hierarchy
- Inbox for officers (listing applications received)
- FIFO principle for taking action on application
- Creation of a Note Sheet for Scanned Documents
- Alerts for delay in action
- Compliance to workflow standards: BPMN, BPEL and WFMC
- Shall support Inbuilt Graphical workflow designer for modelling complex Business Processes using drag and drop facilities.

- Information/Alert to be sent to higher authority in case of delay in action by specific employee of the department
- Pre-defined scrutiny for citizen applications
- Display of all application data during scrutiny process
- Check-list for rejection
- Should have inbuilt Rule Engine for defining rules
- Facility to mark the application to other officer
- Facility to mark the application to other department for their NOC / Comments / Input
- Final Decision by the Decision Authority
- Shall provide graphical and tabular tools to create reports and view progress of each individual process.

a) Notification & Messaging

- Should allow users to mail knowledge content to users / departmentalofficials.
- Should have feature to send the notifications to a user about his/her content being approved /rejected.
- Should have an intelligent feature to either email knowledge content on a specific date and time.
- Should have a built in alert mechanism (Email and SMS) for subscribed documents.

b) Architecture & Scalability

- Should be built using Enterprise Content Management framework
- Should be COTS based solution and platform independent and support for all major operating systems such as Windows, Linux etc. on server side with or without virtualization.
- Multi-tier architecture having web-based solution and support for clustering
- Supports separate Document/Image server for better management of documents and store only metadata information in database.
- Proven Scalability for thousands of users
- Support for de-centralized/distributed architecture
- Store billions of documents in repository

c) Viewing & Annotations

- Support for viewing and annotating on image documents through inbuilt viewer through web and mobile devices
- Inbuilt viewer for viewing scanned documents and facilitates zoom- in/zoom-out, zoom percentage and other image operations like Invert, rotateetc.
- Support view of multipage document having capability to download and view document page by page
- Support view & annotation of PDF/A format documents using inbuilt viewer (open ISO standard for long term archival of documents)
- Provides facility of putting text and image annotations on scanned document.

d) Reporting & Dashboards

- Should have dashboard and reporting capability for viewing the reports such as knowledge content added by users, number of documents per category, content pending to be approved etc.

e) Compliance with Open Standards

- Should compliant to ODMA and WebDAV standards
- Supports interoperability through CMIS compliance
- Workflows of the proposed Knowledge Management System should compliant to open standards such as BPMN, BPEL, WFMC.

f) Document Management Security

Knowledge Management system should allow for multiple permission levels such as:

- At Folder level – All rights (system, group, and user) are assigned at folder level.
- At system level – Set global access rights at the overall system level.
- At the group level – The most efficient way to manage security rights is defining the access rights at group level wherein users who are part of the specific groups will be able to perform operations accordingly.
- At the user level – Set permissions for Individual users.

Apart from this, Knowledge Management System should also have various other key security features having support for:

- Defining multiple levels of access rights (Delete/ Edit/ View/ Print/ Copy or Download).
- Define system privileges like Create/Delete Users, Define indexes etc.
- Support for Digital certificate
- Facility to define password policy with extensive password validations like passwords must be of minimum 8 characters which shall be alphanumeric, locking of user-id after three un- successful attempts, password expiry, password history so that passwords are not same as previous passwords etc.
- Extensive Audit-trails at document, Folder and for highest levels for each action done by user with user name, date and time
- Encryption of documents and metadata

g) Application Integration Capability

- Support for web services, Java based API, and URL-based integration
- Integration based on standards such as XML
- Active Directory/LDAP integration

1.2. Expectations from Integrated Command and Control Center Platform for Expansion of integration of up to 36 New Services

1.2.1. **In this scope it is the responsibility of the MSI to be able to integrate up to 36 new services which are presently not mentioned or part of scope, within the entire project period of 36 months**

1.2.1.1. **The integration of these services shall include the following: -**

1.2.1.1.1. **Creation, Collection & Integration of API and other data sets from these individual services developed by various different agencies.**

1.2.1.1.2. **Creation of the Rule engine, analytical Engine, Dashboard, Administrator Mobile App Upgradation,**

KPI, Cross-Reference Analytics and others.

1.2.1.1.3. **Maintenance of the service component for 36 months from time of its individual go live**

1.2.1.1.4. **The service shall be following and integrating into the ICCC platform as per the above-mentioned specifications in Section 1.1**

GIS Software requirements:

GIS Enterprise Solution – Minimum Functional Requirements

S. No.	Minimum Functional Requirements	Compliant (Yes / No)
GIS/NKGSCCL/1.01	MSI shall integrate all spatial & non-spatial data of this project into an Enterprise Geodatabase and develop a GIS portal with required GIS functions, Tools, Analysis & Dashboard to provide web access to all users of the project	
GIS/NKGSCCL/1.02	MSI shall supply & deploy GIS Server software/engine and publish maps to all users of project.	
GIS/NKGSCCL/1.03	MSI shall be responsible for appropriate geo referencing & geo tagging on the map covering all relevant assets (Not limited to the list given here) like Wi-Fi Hotspots, CCTV locations, street poles, etc. MSI should gather layers of all components being implemented to the MSI. MSI shall incorporate these layers in the overall GIS solution	
GIS/NKGSCCL/1.04	MSI shall provide GIS engine that shall allow operators to get an overview of the entire system and access to all the system components dynamically. GIS engine shall enable dynamic view of the location and status of resources and objects/sensors	
GIS/NKGSCCL/1.05	System shall enable authorized user to open a new incident and to associate the	

S. No.	Minimum Functional Requirements	Compliant (Yes / No)
	incident with its geographic location automatically, via GIS display	
GIS/NKGSCCL/1.06	MSI shall carry out application development to functions & tools as per requirement	

GIS/NKGSCCL/1.07	Data Design, Modelling and Services: • MSI shall finalize the data list with all its structure & metadata for approval; • MSI shall carry out data integration requirement study with stakeholders and submit SRS (System Requirement Study) and Architecture document for approval by considering following factors (not limited to): - Best GIS practices shall be followed in spatial positional accuracy, GIS layers overlay matching accuracy, data correctness and completeness; - All the data generated, stored, linked as a part of this project from various modules shall be available as necessary to integrate with GIS portal through web services or data sharing through live/real time, offline, periodical, etc. as deemed to be appropriate; - Apart from other modules data, all other required data for GIS portal shall be carried out with suitable data design and data modelling; - All required Data Modelling, Design shall be carried out by MSI to get Design Document approved from Rourkela Smart City; - Scale of mapping shall be 1:1000 or better as per requirement; - Integration of Government-to-Customer (G2C), Government-toGovernment (G2G) & Government-to-Business (G2B) data; - Integration, export & import of various formats of data such as KML, JSON, XLS, XML, etc.; - 3D Data of city. • MSI shall carry out collection of data from various agencies or Government departments. All required data (spatial and non-spatial) are to be arranged by MSI. Rourkela Smart City will help by issuing required authorization letters; • Data creation - Necessary Field Survey, collection from various sources, compilation, digitization, accurate geo-referencing of spatial & Image data, migration, data conversion, integration, Enterprise Geodatabase preparation & maintenance shall be carried out by MSI; • MSI shall be responsible for identifying Data Gaps & take necessary measures & tasks to complete the data; • It is responsibility of MSI regarding required Data Quality, Correctness & completeness. MSI shall follow standard QA-QC practices in data management; • After successful Go-live and implementation, the Maintenance & Operation of GIS shall be carried out during MSI's contract period by taking care of Data Management, 24/7 availability of Database, periodical data updation, editing & performance management.	
GIS/NKGSCCL/1.08	Should be capable of integrating with existing GIS data available with NKDA	
GIS/NKGSCCL/1.09	MSI shall deploy/install GIS Engine (GIS Server Software) on Client provided data center facility. It should have advanced GIS tools/ functionalities, capabilities	

S. No.	Minimum Functional Requirements	Compliant (Yes / No)
	and allow development of powerful GIS applications for GIS based information sharing, planning and Decision Support along with integration with Enterprise system;	

GIS/NKGSCCL/1.10	GIS platform should provide the means to create, organize, secure, and manage geographic assets. As a centralized portal, it shall provide a single gateway interface and capabilities for all map based web services, data management, visualization and analysis	
GIS/NKGSCCL/1.11	This Application should enable users to view multiple data layers on a map and perform various advanced functioning like map navigation, search, query, data analysis, geo processing, printing. It should support high scalability, security, availability, OGC Services of Open & Inter Operable standards and should be Industry standard Technology	
GIS/NKGSCCL/1.12	Deployment of GIS Server Engine (Software) with Performance settings, Server settings, Hardware & Software performance settings, Security settings, Administrative roles/privileges settings, Role based functionality access for 3 to 4 levels, RWD (Responsive Web Design) settings, etc.	
GIS/NKGSCCL/1.13	MSI shall be sole responsible for creating an integration approach through integration service bus for message delivery, services based on standards such as SOAP, HTTP and WCS	
GIS/NKGSCCL/1.14	The integration service bus shall be designed to promote high throughput, compatibility, flexibility and scalability. Specific functionalities need to be configured for data retrieval from Web-GIS	
GIS/NKGSCCL/1.15	Shall provide a simple and easy to manage integration architecture for all external applications and should have functionalities to check for integrity and validity of data during import & export	
GIS/NKGSCCL/1.16	Solution should be compatible with various open standards and technologies and should not restrict RSCL in using the solution data for any other applications, and should compliance National Data Sharing and Accessibility Policy (NDSAP)	
GIS/NKGSCCL/1.18	The client side user interface & map display Performance shall ensure real-time response (within 2 sec) at any given point of time & ensure uninterrupted performance; • The web user interface for the GIS map shall allow basic functionalities including (but not limited to) zoom factor/scale based feature loading, variable symbology, linetype scaling, cartography standards, etc.; • The system should have secured access; • Efficient search tools & print tools; • Efficient query tools – Spatial Query & non-spatial query; • 3D view options of buildings & terrain; • Role based access allowing various functionalities at different roles.	
GIS/NKGSCCL/1.19	GIS base map shall include following, but not limited to these data with attributes which shall be finalized during study phase; • Road Network • Rail Network • Administrative Boundaries • Building footprints and names • Points of Interest data, not limited to:	

S. No.	Minimum Functional Requirements	Compliant (Yes / No)

	- Health Services (Hospitals, Blood Banks, and Diagnostics Centre, Ambulance Services, Other Medical Services etc. - Community services (Fire stations, Police stations, Banks, ATMs, Post offices, Educational facilities, Govt. Buildings etc.) - Business Centres (Shopping malls, Markets, Commercial complexes etc. - Residential areas (Apartments, Housing societies) - Transportation (Bus stops/Terminus, Parking areas, Petrol Pumps, Airports etc.) - Recreation facilities (Restaurants, Theatres, Auditoriums etc. - Other utilities such as travel and tourism facilities, religious places, burial grounds, solid waste locations • Land-Cover (Green areas, Open areas, Water bodies) • Address Layers (Pin code, Locality, Sub-Locality etc.) • Utility Networks (OFC, Water, Sewer, Drainage etc.) • Locations of other Municipal Assets • Education (Primary/Secondary/High School/Colleges) • Religious structures • Community centres	

GIS/NKGSCCL/1.20	Detailed system requirement study, architecture & design shall be carried out with project stake holders and get approvals from client by considering following factors (not limited to): • Enterprise level Architecture, Design & Development; • Service Oriented Architecture, Scalability, Interoperable standards and Agile development; • User Experience with portal; • Web Design and Content Management: Innovative or latest proven trends of Graphics design, Web pages, UI buttons & Tools development; • Real time performance of portal at user end; • User friendly & Interactive interface: Innovative UI Techniques, Easy & minimum clicks-based operation by users, Scale, zoom factor-based Map features display, Best practices of map features display, advanced techniques of features & symbols display management; • Map cartography - International standard shall be followed in terms labelling, color, linetype, Aesthetics, Symbology, Feature overlap management, etc.; • Development of Functions, Tools, Analysis, Dashboard; – Shall facilitate to create, delete & modify different Enterprise GIS Users Shall be accessible only to System Administrator while all other modules/sub modules shall be accessible to individual users based on the access rights provided to them by System Admin – Create Application Interface – Create admin right and grant suitable viewing/ data editing rights – Monitor access rights to user departments – Maintains Application Security – Shall allow Active Directory, LDAP, or other security source – Shall allow administrator to configure security to map service, layer and attribute levels – Shall allow group based security policies	

S. No.	**Minimum Functional Requirements**	**Compliant (Yes / No)**

	- MSI shall suggest firewalls that natively support all protocols required between the various servers (database, application and web) in the package. No special configuration shall be required to configure the firewall - Any changes to data should be recorded in a separate table and should be stamped with the identity of the user/program and the date / time of the creation/ change • The application should have all the map browsing functionalities implemented, including Descriptive Map Information Tool • Development of customized redlining capabilities; - Shall allow users to draw simple shapes (point, line, rectangle, polygon and circle) and add text to make annotations and markups to the map that should be printable. It shall allow the user to provide supplemental information on the map - Shall allow user to set the redlining display style based on the following specification: Line: color, style, transparency and width. Rectangle, circle, and polygon: fill color, fill opacity, outline style, outline color and outline width • Shall have ability to hyperlink to document, images, avi files and PDF files with the feature's attribute, and also allow user to email map as an attachment • Ability to connect to Data Stream: Connectors for common data streams including in-vehicle GPS devices, mobile devices, and social media providers • Process and Filter Real-Time Data: Detect and focus on the most important events, locations, and thresholds of operations without interruption. (data transmission without latency) Should be able to accommodate multiple streams of data flowing continuously through filters and processing steps that you define. (live event route mapping) • Monitor Assets: Track most valuable assets on a map. Should be able to track dynamic assets that are constantly changing location (such as vehicles), or stationary assets, such as weather and environmental monitoring sensors. • Respond to Events in Real Time: When locations change or specified criteria are met, automatically and simultaneously send alerts to key personnel, update the map, append the database, and interact with other enterprise systems. Alerts can be sent across multiple channels, such as emails, texts, and instant messages • Development of customized advanced analysis, query, search and report generation functions as per requirement by Enterprise level integration with various systems. Implement customized spatial analysis, weightage based thematic analysis, Spread analysis, Neighborhood analysis, required realtime geo-processing, Thematic mapping functions, etc. followed by generation of user friendly reports; • Web Services: Development and Enablement of Web Services for integration with external systems and access by external systems; • Development of Mobility Solutions, Mobile Apps, Web Apps and Location Analytics; • One-stop-shop or single point of interface for users of project with regard to access of all project implementations & features;	

S. No.	Minimum Functional Requirements	Compliant (Yes / No)
	• Integration & Development with Crowd sourcing, Social Media, Mobile & other Internet trends; • Development of any sub systems and portals for ease of use; • Integration of G2C, G2G & G2B functions; • Integration, Export & Import of various formats of data such as KML, JSON, XLS, XML, CSV, GPS data, etc. with external systems; • All Security aspects are considered for development; • All required web interface Modules and Sub-modules shall be planned & designed as per requirement.	

GIS/NKGSCCL/1.21	Specific Web portal capabilities to be included as functional features: • Facility for display of spatial layers, query management like have various query tools for queries based on attributes, location, etc. • Integration of G2C, G2G & G2B functions; • Facility for basic Navigation tools like the software should have tools to Pan, Zoom, and Rotate the Map according to user requirements • Facility for spatial data classification based on specific attribute value and report generation • Ability to search and to zoom into the user specified x, y coordinates • Provision for definition of map projection system and geodetic datum to set all the maps in a common projection and scale. • Facility to click on any feature of the map and return a select set of attributes for feature. • Facility to perform the spatial intersection analysis like plot area with buffer zone to calculate road widening impact on adjacent land. • Allow user to open raster images, or satellite images of various standard format. • Ability to import / export data from / to various formats like shape, MIF, dxf etc. • Allow users to export query results to various file formats like bmp, Tiff, Jpeg, pdf, etc. • Support printing spatial data at different scales and at adjustable print quality. • ODBC compliance enabling interface with leading industry RDBMS should be there. • Allow user to create layers or shortcuts to geographic data that store symbology for displaying features. • Provision of hyper linking the GIS feature as well as its attribute fields with existing documents, drawing files or scanned maps related to that feature. • Facility to create and organize user desired number of Spatial Bookmarks and should be able to share the same. • To have Control environment, feature functions, spatial relationship and geometric functions including math's and transformation functions • The software should support Map Services, Open Geospatial Consortium, Inc. (OGC) services like WMS, WFS etc. • The Application shall be able to serve multiple maps/layer with single/fewer configurations or shall have support for SQL Views • The WebGIS Application shall be highly scalable to serve increasing number of user with no extra cost	
S. No.	**Minimum Functional Requirements**	**Compliant (Yes / No)**
	• User should be able to see the location of CCTV cameras installed and mapped on to the GIS map • System should have provision to integrate with video feeds available from CCTV camera	

GIS/NKGSCCL/1.22	Other Miscellaneous features to be incorporated (not limited to): • Editing Support role based multi-user editing access and editing work flows Select features such as bookmarks, one-web functionality • Generation of thematic maps on-the-fly based on attributes details available in the GIS layers • Provision to store audit trial of user activities performed on the application • Web Development shall be done with best practice programming language and web development; • Integration with external system such as State Remote Application Centre, State Disaster Management System, etc., if required; • Integration with Open Data System; • Manage complete operations and maintenance of the developed application and ensure that the developed application is bug / error free, running smoothly and simultaneously incorporate necessary changes in the application functionality;	

PROJECT RESOURCE SPECIFICATIONS

Sl. No.	**Name of the resource** **Category**	**Experience**		**Minimum Number of years on rolls of Agency or *worked on Government /PSU projects***
		Basic Qualification* & Experience# in years	**M. Tech/ M.E *I* MS in Computer Science *I* IT *I* Electronics**	
1	Project Manager	8+	6+	3+
#	Required Experience for Sl. no. 1	Experience in areas such as application development, technology management, and demonstrated skills in configuration management, data management, information management, network security, IT architecture, infrastructure design, systems integration and systems life cycle management. Worked on software development for major projects with proven programming skills		
2	Tech Lead Level 2 /Solution Architect/ Security Expert	6+	5+	2+
3	Tech Lead Level 1/Server Admin/DBA	4+	3+	2+

4	Senior Programmer / Senior Technical Support Engineer / Sr. Testing Engineer / Training Specialist/ Document Writer/UI Designer (Level 2) / Offshore Developer for API collection	4+	3+	1+
5	Senior Programmer/ Senior Programmer / Senior Technical Support Engineer / Sr. Testing Engineer / Training Specialist/ Document Writer/UI Designer (level 1)	2+	1+	0

#	Required Experience for Sl. no 2 to 5	**For Senior Programmer *I* Senior Technical Support Engineer:** Experience in software development for major software development projects with proven programming skills and having exposure with version control systems like RCS/CVS/SVN. The candidate should be aware of the latest technology development in hardware and s o f t w a r e and capable of leading a team of developers/programmers. **For documents writers** : having the ability to create, assimilate, and convey technical material in a concise and effective manner **For Testing Engineer:** Experience in Test planning, Testing techniques (test design and test execution), Reporting defects and test results, Queering databases, Operating a test automation tool, Programming a test etc. Having exposure to Testing tools like Meter and Bug tracking tools like bugzilla. **For Server Admin:** Experience in design, install, administer, and optimize of servers, management of the server environment, assist in overseeing the physical security, integrity, and safety of the data server. **For DBA:** experience in carrying out performance, integrity and security of a database. Must be able to do planning, development and troubleshooting, maintaining data standards, including adherence to the Data Protection Act; writing database documentation, controlling access permissions and privileges; developing. managing and testing back-up and recovery plans; ensuring that storage, archiving, back-up and recovery procedures are functioning correctly; capacity planning etc. **Training Specialist:** Good at Communication, Clarity of Speech, Sound technical knowledge of the domain in which training is to be imparted , Ability to make presentations/charts /graphs, conduct class room sessions, compile information on the courses, take feedback and compile.

		Solution Architect: Experience of assessing project needs in various domains. The candidate must be able to offer value addition to the project requirements and also with respect to the future needs and socio-economic aspects. Selection and application of technology must be their strength and must be capable of managing multiple projects. **Security Expert:** Experience in same role (i.e. Security Expert). Exposure to BS15000 process /ISO 27001/ BS 7799*I* ISO 20000*I* ITIL or ITIL certified and should be able to carry out security audit of applications and also assist development teams in resolution of these security bugs. ## UI Designer: Experience in Web / Mobile Devices UI- UX design and development		
6	Technical Support Engineer / Testing Engineer / Quality Expert	2+	1+	0
*	Basic Qualification for all the above resource levels (Except UI Designer)	(a) B.Tech /BE/MCA with specialization in Computers/ Electronics *I* IT **OR** (b) M.Sc. in computer Science/IT with One-year Experience in Software Development /Implementation **OR** (c) Master's Degree in Physics/ mathematics/ Statistics/ Operational Research/Electronics with EITHER with Post Graduate Diploma in Computer Science / DOESEC (A level) certification with One-year Experience in Software Development Projects **OR** Two-year Experience in Software Development/Implementation Projects		

**	Basic Qualification for UI Designer	Minimum Bachelor in Fine Arts (BFA) / Masters in Fine Arts (MFA)/B. Arch / B. Design/ M. Design / PG diploma in Web
7	Programmer	
	* Basic Qualification required for **Programmer**	(a) B. Tech/BE/MCA **OR** (b) M.Sc. in computer Science/ IT/ Physics / mathematics / Statistics/ Operational Research /Electronics **OR** (c) Graduate in Computer Science/ IT*I* Physics/ mathematics/ Statistics / Operational Research *I* Electronics
8	IoT Solution & Architecture Expert & Principle Solution Architect	(a) B. Tech/BE/MCA **OR** (b) M.Sc. in computer Science/ IT/ Physics / mathematics / Statistics/ Operational Research /Electronics **Qualification Description & Roles: -** The IoT solution architect should have experience in at least 5 IoT projects. These projects should be around the sphere of Industrial IoT & Smart City Sensors. Should have experience in architecting solution containing over 1000 IoT End Nodes. The responsibility of the IoT architect shall be to create the underlying blueprint for the data consumption of IoT end points from heterogenous sources presently available and also for future readiness. The Solution Architect's responsibilities include gathering requirements and functional specifications, assessing the current software systems in place in order to identify areas in need of improvement, and overseeing development teams.

9	Data Science Consultant	(c) B. Tech/BE/MCA **OR** (d) M.Sc. in computer Science/ IT/ Physics / mathematics / Statistics/ Operational Research /Electronics **Qualification Description & Roles: -** The Data Science Consultant should have previous experience in similar domain of heterogenous citizen data sources for at least 50,000 individual data sources. Data Science Expert is a worker whose primary job responsibility involve preparing data for analytical or operational uses. The specific tasks handled by data Science experts can vary from organization to organization but typically include building data pipelines to pull together information from different source systems; integrating, consolidating and cleansing data; and structuring it for use in individual analytics applications.

BILL OF QUANTITY DETAILS

SL#	Item Description	UOM	Qty	Section Reference & Remarks
1	Local Application Aggregating Device	Nos.	5	Item 39 under section "Minimum Technical Requirements"
2	Local Application Buffer NAS	Nos.	1	Item 38 under section "Minimum Technical Requirements"
3	Local Networking Switch & Routers	Nos.	2	Item 37 under section "Minimum Technical Requirements"
4	55 inch Video Wall With Controller & Accessories	Nos.	36	Item 2, 3 & 4 under section "Minimum Technical Requirements"
5	Call Centre and Support System Hardware per person	Nos.	4	Item 14 & 22 under section "Minimum Technical Requirements"
6	Anti-room Conferencing System with 4 Screen Video Wall & VC Setup & Furniture & Acc.	Nos.	1	Item 12 & 13 under section "Minimum Technical Requirements" + 4 Screen Video Wall as per Specifications of Item 2 & 3
7	Room Infra and Interior Readiness -Wall -Ceiling -Carpet -Furniture -Civil -interior	Job	1	Item 24 under section "Minimum Technical Requirements" & As per site inspection & self understanding of bidder
8	Smart Server Rack	Nos.	2	Item 35 under section "Minimum Technical Requirements"
9	A3 Multi Function Colour Printer	Nos.	2	Item 10 under section "Minimum Technical Requirements"
10	Monitoring Work Stations	Nos.	10	Item 5 under section "Minimum Technical Requirements"
11	Monitoring Laptops	Nos.	5	Item 9 under section "Minimum Technical Requirements"
12	Security Systems and Firewall	Nos.	1	Item 25 under section "Minimum Technical Requirements"
13	Precision Aircon for UPS Room	Nos.	2	Item 33 under section "Minimum Technical Requirements"

14	UPS And Power Regulation Equipment	Nos.	1	Item 7 under section "Minimum Technical Requirements"
15	Fire, IBMS, Biometric, CCTV	Nos.	1	Item 15,16,17,18,19,20,23,26,27 under section "Minimum Technical Requirements"
16	Electrical Fittings and Setup	Job	1	Item 28,29,30,31,32 under section "Minimum Technical Requirements"
17	100 Mbps Internet Leased Line Connection per Year	Nos.	3	100 Mbps Leased Line for 3 years including support and commissioning
18	12-core Outside Plant OFC Cable & Laying - from State Data Centre to NKDA New Admin Building	Nos.	1	Item 36 under section "Minimum Technical Requirements"
19	Cyber Security Package and Quarterly Audit and Certification per Year	Nos.	3	Security Audit of All Application, Ips & Systems both at ICCC location and at SDC by CERT-IN agency every Quarter for 36 months
20	Recurring Communication Channels like SMS, EMAIL, Phone & Others recurring per Year Cost	Nos.	3	8 Lac SMS/Email/notifications per month
21	Video Wall Integration, Installation & Testing	Job	1	Service & job cost of Integration, Installation & Testing of above video wall
22	Call Centre Hardware Integration with Communication Channels	Job	1	Service & job cost of Call Centre Hardware Integration with Communication Channels
23	Network Side basic Wire Laying	Job	1	Service & Job cost for network creation with CAT6 cable, I/o Box, Connectors & others at the ICCC site - as per bidders understanding on inspection
24	Sr. Developer (3-4 Yrs Ex)	Man Months	12	Refer to section "PROJECT RESOURCE SPECIFICATIONS" under section "Minimum Technical Requirements"
25	Developers (0-2 Yrs Ex)	Man Months	12	
26	Tester (2 Yrs Ex)	Man Months	12	
27	Quality Expert	Man Months	4	
28	Documentation Expert	Man Months	8	
29	UI Designer	Man Months	12	
30	Principle Solution Architect	Man Months	4	
31	IoT Solution & Architecture Expert	Man Months	6	
32	Data Science Consultant	Man Months	3	
33	Database System Admin	Man Months	8	

34	Offshore Developer for API collection	Man Months	8	
35	Middleware - DB cum API Developer (min 3 yrs Ex)	Man Months	16	
36	Sr Application Developer with Experience in Mobile app (Min 5 yrs Ex)	Man Months	6	
37	Sr Application Developer with Experience in Mobile app (Min 3 yrs Ex)	Man Months	9	
38	ICCC Smart City Platform - Perpetual License	Unit Licence	1	Refer to section "1.1-Expectations from Integrated Command and Control Centre Platform with Administrator Mobile Application & GIS platform" under section "Minimum Technical Requirements"
39	All 3rd Party License Cost including GIS Platform, Maps, OTC Software per Year	Year	3	Refer to section "GIS Software requirements: " under section "Minimum Technical Requirements"
40	Future Silo solution Integration per Solution	Total No. of Silo Sols	36	Refer to section "1.2-Expectations from Integrated Command and Control Centre Platform for Expansion of integration of up to 36 New Services" under section "Minimum Technical Requirements"
41	RECURRING COST AMC COST For 0-12th Month	Months	12	Maintenance of Hardware, Software & Platform Systems for mentioned period
42	RECURRING COST AMC COST For 13-24th Month	Months	12	Maintenance of Hardware, Software & Platform Systems for mentioned period
43	RECURRING COST AMC COST For 25-36th Month-Next Year	Months	12	Maintenance of Hardware, Software & Platform Systems for mentioned period
44	Extended Technical Support for 0-12 th Month	Months	12	• MSI shall provide the following resources for onsite support: - o Hardware Technical Engineer as per level of Sr. Developer– 1 Resource – Day Shift o Software Systems Technical Engineer level of Sr. Developer– 1 Resource – Day Shift o The system support shall be provided 7 Days a Week, 24 Hour basis o For Sundays, 2nd shifts & Night shifts, 1 Engineer level of Sr. Developer, shall be available on site & 1 Engineer to be available on call for any exigencies Failing to meet the above requirement of engineers on any day shall be counted as breach of SLA & LD clause shall apply
45	Extended Technical Support for 13-24th Month	Months	12	• MSI shall provide the following resources for onsite support: - o Hardware Technical Engineer as per level of Sr. Developer– 1 Resource – Day Shift o Software Systems Technical Engineer level of Sr. Developer– 1 Resource – Day Shift o The system support shall be provided 7 Days a Week, 24 Hour basis o For Sundays, 2nd shifts & Night shifts, 1 Engineer level of Sr. Developer, shall be available on site & 1 Engineer to be available on call for any exigencies Failing to meet the above requirement of

				engineers on any day shall be counted as breach of SLA & LD clause shall apply
46	Extended Technical Support for 25-36th Month	Months	12	• MSI shall provide the following resources for onsite support: - o Hardware Technical Engineer as per level of Sr. Developer– 1 Resource – Day Shift o Software Systems Technical Engineer level of Sr. Developer– 1 Resource – Day Shift o The system support shall be provided 7 Days a Week, 24 Hour basis o For Sundays, 2nd shifts & Night shifts, 1 Engineer level of Sr. Developer, shall be available on site & 1 Engineer to be available on call for any exigencies Failing to meet the above requirement of engineers on any day shall be counted as breach of SLA & LD clause shall apply