



Request for Proposal (RFP) For

Implementation of Intelligent Traffic Management System, Adaptive Traffic Control System, CCTV and Surveillance System, Solid Waste Management and Integrated with Command and Control Centre (ICCC)

Corrigendum 1

RFP No. 02/ASCL/MSI-ICT/2018

Date: 28th May 2018

ISSUED BY
Agra Smart City Limited

With reference to the **RFP No. 02/ASCL/MSI-ICT/2018**, the following corrigendum is made:

The last date of online Bid Submission is now **12/06/2018 (Monday)** till **15:00Hrs**. The POC date will be 18/06/2016.

Note:

1. The Bidders are requested to take note of the following changes made in the RFP documents, which are to be taken into the account while submitting the RFP. They shall be presumed to have done so and submitted the RFP accordingly.
2. This corrigendum shall be the part of the RFP document.
3. All items specified in the corrigendum supersede relevant items to that effect as provided in the original RFP documents. All other specifications, terms and conditions of the original RFP document shall remain unchanged
4. The queries raised and given by the bidders, but the clarifications are not made in this corrigendum shall be considered to remain unchanged as per the terms and conditions mentioned in the original RFP documents.
5. All submissions related to EMD, PBG, and bid document submission to be in the name of CEO, Agra Smart City Limited.
6. All the components mentioned in the original RFP document shall be supplied to sustain all possible city conditions of Temperature, Humidity, Fog, and Storm etc.
7. Bidder shall read and consider following points which shall be part of the RFP documents:

| Sr. No | RFP Volume / Section | Page Number | Content in the RFP | Amended / New Clause |
|--------|--|-------------|--|--|
| 1 | Volume 1, 3.5. Pre-Qualification Criteria, S.No. 6 | 42 | Sole Bidder or consortium should have experience in implementing 4 projects (each from different sector mentioned below) during last 7 years: § Adaptive Traffic management system § Intelligent Traffic Management system § Variable Messaging System/ Public Address System/ Environmental Sensor / Emergency/ Panic Box System § ICT based Solid Waste Management § CCTV based Surveillance System § City Operation Command Centre / Command and Control Centre | Sole Bidder or consortium should have; A) Completed four (4) projects out of 7 different components given below and B) Should have completed or on-going four (4) projects out of seven 7 different components given below during last 7 years (in different cities) 1. Adaptive Traffic management system 2. Intelligent Traffic Management system 3. Variable Messaging System/Public Address System/Environmental Sensor /Emergency/ Panic Box System 4. ICT based Solid Waste Management 5. CCTV based Surveillance System 6. Operation Command Center/ Command and Control Centre 7. GIS System |
| 2 | Volume 1, Section 2.28: Eligible Goods and Services, and OEM Criteria: | 34 | All quoted OEM should have either quality standard certifications like ISO 9001-2008/2015, ISO 14001, ISO 27001, wherever applicable to ensure only quality OEM participation, as on date of RFP release. | All quoted OEM should have either quality standard certifications like ISO 9001-2008/2015/ISO 14001/ISO 27001, whichever applicable to that particular product of OEM, to ensure only quality OEM participation, as on date of RFP release." |
| 3 | Volume 1 | 41 | 3.5, Point no 5: CMMI level 3 or | CMMI Level 3 or higher to be used of |

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| | | | higher | Parent/subsidiary of Lead Bidder or any of a Consortium Partner. As a proof of document bidder can submit letter from company secretary. |
| 4 | Volume 2, 7.6.1 Datacenter Specification | 128 | The 'Data Center' (DC) infrastructure catering to all the Components & features of the Agra Smart City – ICT Solutions, will be co-housed in the building identified by ASCL, which will be provided to MSI with requisite space and electric power depending on the requirement as per the proposed solution of MSI. | The 'Data Center' (DC) infrastructure catering to all the Components & features of the Agra Smart City – ICT Solutions for IT infrastructure should have primary location within ICCS at ASCL and at the existing UP Dial 100 Control Room for Police related data. |
| 5 | Volume 1, Section 3.5.3, Pre- Qualification | 41 | Sole Bidder/ Bidder (each of consortium members in case of consortium) should have a positive net worth as on last date of latest audited financial year preferably 2016-17. Certificate from the statutory auditor/ Company secretary clearly specifying the Net worth for ICT projects for the specified year to be provided. | Sole Bidder/ Bidder (each of consortium members in case of consortium) should have a positive net worth for last 3 financial years, 2014-15, 2015-16, and 2016-17. Certificate from the statutory auditor/ Company secretary clearly specifying the Net worth in context to company as on last date of audited financial year preferably 2016-17. |
| 6 | Volume 1, Section 3.5.4, Pre- Qualification | 41 | As on the date of the submission of the proposal, The bidder (each of the member of the Consortium in case of consortium) including their parent/ subsidiary/ associate company should not be blacklisted by any Central / State Government Department or Central/State Public Sector Units (PSUs) in India | "As on the date of the submission of the proposal, The bidder (each of the member of the Consortium in case of consortium) including their parent/ subsidiary should not be blacklisted by any Central / State Government Department or Central/State Public Sector Units (PSUs) in India" |
| 7 | Volume 3, 89 | 90 | Liquidated Damages: deduct from the Contract price, as liquidated damages, a sum equivalent to 1 % per week of entire contract value for a milestone/quarter | Liquidated Damages: deduct from the Contract price, as liquidated damages, a sum equivalent to 1 % per week of undelivered portion for a milestone/quarter |
| 8 | Volume 1, Instructions for Online Bid Submission | 14 | Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document/schedule and ordinarily it shall be in PDF/xls/rar/jpg/dwf formats. If there is more than one document, all may be clubbed together and provided in the requested format. | Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document/schedule and ordinarily it shall be in PDF/xls/rar/jpg/dwf formats. If there is more than one document, all may be clubbed together and provided in the requested format. Bidders Bid documents may be scanned |

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| | | | Bidders Bid documents may be scanned with 100 dpi with black and white option. It is advisable that each document to be uploaded through online for the tenders should be less than 2 MB. If any document is more than 2MB, it can be reduced through zip/rar and the same if permitted may be uploaded | with 100 dpi with black and white option. It is advisable that each document to be uploaded through online for the tenders should be less than 2 MB. If any document is more than 5MB, it can be reduced through zip/rar and the same if permitted may be uploaded. (high resolution documents in a pen drive to be submitted during physical submission) |
| 9 | Volume #1/3.5 Pre-Qualification Criteria Point# 6. | 42 | Copies of Work Order, Work Completion certificate by Client Entity (on Client Entity letterhead) and other relevant documents clearly highlighting the Scope of Work, Bill of Material and Value of Contract. | Copies of Work Order, Work Completion certificate by Client Entity (on Client Entity letterhead) and other relevant documents clearly highlighting the Scope of Work for Completed Projects or Go-Live Projects |
| 10 | Volume 1, Section 2.2. Eligible Bidders, C) | 20 | Experience of OEM companies can be used for Bidder Project Experience in one component only. | Experience of OEM companies can be used for Bidder Project Experience in two components and is valid and allowed to be used under section 3.5 and section 3.7 of Volume 1. |
| 11 | Volume 1/1.4. Fact sheet/Point 9 | 18 | Last Date and time for Bid/Bid submission (On or before) 15th May, 2018, up to 14:00 Hrs | The last date of Bid Submission is 12/06/2018 (Tuesday) till 15:00Hrs. Additional 3 days (72 hours) to submit hard copy after online bid is closed. |
| 12 | Volume-1, 3.8. Key Personnel Criteria | 49 | Project Manager Education: Full Time MBA/MCA/M. Tech & B. Tech/B.E. from a reputed institute | Education: Full Time MBA/MCA/M. Tech/PGDM/Equivalent & B. Tech/B.E. /Equivalent from a reputed institute |
| 13 | Volume-1, 3.8. Key Personnel Criteria | 49 | GIS Expert a. Educational: Bachelor's Degree in Engineering/MCA b. Certification: A professional certificate in GIS mapping/ Web map programming c. Work experience in Implementation of GIS Projects (with more than 6 years of relevant experience) | GIS Expert a. Educational: Bachelor's Degree in Engineering/MCA/Msc Geo informatics b. Certification: A professional certificate in GIS mapping/ I Web map programming c. Work experience in Implementation of GIS Projects (with more than 6 years of relevant experience) |
| 14 | Volume 1, 6.3 Company Profile | 58 | 6. Service Tax number 7. VAT number | 6. GST number 7. Deleted |

Volume 2

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| <p>15</p> | <p>Volume 2: Scope of Work 7.2. Design, Configuration, Installation and Commissioning of DC and DR</p> | <p>124</p> | <p>26. Video feeds shall be stored for 30 days online/real-time and shall be securely archived for 1 year which is flagged or is registered in evidence. The transaction data for minimum 1 year shall also be stored within the Data Centre infrastructure.</p> | <p>Police Related Data:</p> <ul style="list-style-type: none"> • Primary Storage of Data (Video Feeds) should be on SAN for 30 days • Incident related flagged data shall be retained for 90 days. • Additional Capacity to be considered at 5% of all cameras. • For Incident/Flagged Data greater than 90 days, it has to be available at secondary storage as per location specified by Authority (Police/DR) <p>General Surveillance & Other Data (ICCC)</p> <ul style="list-style-type: none"> • Primary Storage of Data (Video Feeds) should be on SAN for 30 days • Primary Storage for Data (other than Video feeds) should be on SAN for 1 year • Incident related flagged data shall be retained for additional 90 days. • Additional Capacity to be considered at 5% of all cameras. • For Incident/Flagged Data greater than 90 days, it has to be available at secondary storage as per location specified by Authority (ICCC/DR) <p>Disaster Recovery Site:</p> <ul style="list-style-type: none"> • DR will be Active replica of Police Control Room and ICCC. • Storage of Data (Video Feeds) should be on SAN for 30 days • Storage for Data (other than Video feeds) should be on SAN for 1 year • Incident related flagged data shall be retained for additional 90 days. • Additional Capacity to be considered at 5% of all cameras. • All data to be moved to Secondary storage after above stipulated time and preserved. • Changes Suggested at all sites: Tape Library or Disk based offline Secondary Storage System shall be proposed by MSI with the required Usable Capacity for archival of selected flagged data which is expected to be preserved beyond 90 days. |
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| 16 | Volume 2, 3.16.7 | 47 | <p>Civil and Electrical Works</p> <p>1) MSI shall be responsible for carrying out all the civil work required for setting up all the field components of the system including:</p> <p>2) Preparation of concrete foundation for MS-Poles & cantilevers</p> <p>3) Laying of GI Pipes (B Class) complete with GI fitting</p> <p>4) Hard soil deep digging and backfilling after cabling</p> <p>5) Soft soil deep digging and backfilling after cabling</p> | <p>The clause stands as it is. The requisite permissions of Right of Way (RoW) shall be issued by SPV while the coordination with relevant authorities shall be facilitated by the MSI..The ROW charges will be borne by ASCL whereas the Re-Instatement (RI) charges along with other all fees has to be borne by Bidder.</p> |
| 17 | Volume 2: Section 1.8, Point xxiii | 21 | <p>MSI shall directly interact with electricity boards for provision of mains power supply at all desired locations for any Field Infrastructure solution. ASCL shall facilitate, if any documentation is required from its side. MSI shall be responsible for provisioning of requisite electricity power and its recurring charges (during operational phase). MSI may provision the same under appropriate heads in the commercial bid.</p> | <p>MSI shall directly interact with electricity board for provision of mains power supply at all desired locations for solution. MSI shall be responsible for all payments, to the electricity board directly, till commissioning of the project. ASCL will bear electricity charges post commissioning and MSI to pay to electricity board directly and will be reimbursed the amount submitted after verification in next billing cycle.</p> |
| 18 | Volume 2: 14 Payment Terms | 304 | <p>B. Phase II, 3. On Supply, Installation and Commissioning of each component</p> <p>C. Phase III, 4: After 3 Months Testing & Go Live of all components</p> | <p>B. Phase II, 3. On Supply and Installation of each component</p> <p>C. Phase III, 4: After 3 Months Testing & Go Live of all components. 60% completion of components, post user acceptance would be eligible for Go Live.</p> |
| 19 | Volume II, 2.5. ATCS APPLICATION.4 | 28 | <p>The application support interfacing with a commonly used microscopic traffic simulation software for pre and post implementation analysis and study of the proposed ATCS control strategy.</p> | <p>MSI should provide an online simulation software which is directly interfaced with ATCS system for assessing various situations and provide best strategy to ASCL</p> |
| 20 | Volume II, 2.5. ATCS APPLICATION.6 | 28 | <p>The application should be capable of operating in the following four modes: Fixed-time mode, VA mode, Fully adaptive mode – tactical, Remote operation</p> | <p>In addition to Fixed-time mode, Remote Operation, VA mode, Fully Adaptive Mode, MSI can provide additional software modules to ASCL which benefits the Monitoring and Controlling of ATCS Applications and Signal for governance in city</p> |
| 21 | Volume 2, 2.6, Technical Specification , Adaptive | 29 | <p>Adaptive Traffic Management Software (ATMS) would be chosen which implements SCOOT (Split Cycle & Offset Optimization Techniques), CoSiCoSt</p> | <p>Adaptive Traffic Management Software (ATMS) would be chosen which implements a dynamic signal timing plan selection or adaptive system that uses</p> |

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| | Traffic Management Software | | (Composite Signal Control Strategy) or any other dynamic signal timing plan selection or adaptive system that uses near-real-time detector data. ATCS must be chosen to provide accuracy as required for successful functioning of ATMS as per SLAs defined. ATMS software should have a centralized user interface accessible from control room and it should support remote /manual operation of traffic signals from control room. In addition, ATMS software should support selective vehicle (fire engines, ambulances and VIP vehicles) priority at traffic signals using GPS data. | near-real-time detector data. In addition, the ATCS software shall have to capability of real time traffic modeling. The software shall also provide the functionality of providing traffic flows, OD movements and queues on integration with ATCC. ATCS must be chosen to provide accuracy as required for successful functioning of ATMS as per SLAs defined. ATMS software should have a centralized user interface accessible from control room and it should support remote /manual operation of traffic signals from control room along with the adaptive modes. In addition, ATMS software should support selective vehicles priority (fire engines, ambulances and VIP vehicles) at traffic signals using GPS data. |
| 22 | Vol.2/ 9.14 | 273 | VWCCC.005 Brightness - 240 Cd/m ² or better | VWCCC.005 Brightness 800 Cd/m ² or better |
| 23 | Volume 2, 3.12 Face Recognition System | 39 | The FRS algorithm/engine should have appeared in top 10 listing of latest NIST benchmark test. | The FRS algorithm/engine should have appeared in top 10 listing of latest NIST benchmark/ performance test. |
| 24 | VOL 2, Clause 3.15.1 Police Vehicles | 42 | Packed with gear for emergency response vehicles, temporary security installations, wearable tech, and more, Smart Mobile Enforcement arms you for every situation. Keep personnel accountable, track events for forensics, and safely secure data for Smart analysis | There is no change in the clause. Additionally, MSI may decide to install ANPR and Surveillance cameras in each of this police van, as per the consultation with the Agra Police. |
| 26 | Volume 2, O - Pole for Cameras - Junction Box | 61 | All the junction boxes shall be out door type with IP65 protection from rain, water. Provision for theft prevention. (Expected outdoor temperature 50 degrees C). | All the junction boxes shall be out door type with IP 55 protection from rain, water. Provision for theft prevention. (Expected outdoor temperature range is -5 degrees C to 60 degrees C). MSI needs to factor in weather conditions based on Agra weather historic data. |
| 27 | Vol.2/ 3.17 Technical Specs.VaMS.02 8 | 56 | Display Protection: The front of VaMS display board should be weather resistant IP 65 rated w.r.t various climatic conditions | The front of VaMS display board should be weather resistant IP 65 rated and rear should be IP 55 keeping the heat dissipation requirement in mind |
| 28 | VOL II I. Variable Message Sign Board – VaMS | 56 | The signboard unit shall be able to communicate with central command center computer using GSM data channel (GPRS) / Ethernet will be used to send online messages. | The clause stands as it it. Additionally, System should have secure access mechanism for validation of authorized personnel. It should have a high level of data encryption (128 bit or more) to |

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| | | | | avoid any hacking into the software. |
| 29 | Volume 2, 3.17 | 56 | VaMS.015, Pixel Density: Minimum 3096 pixel / m2 | VaMS.015, Pixel Density: Minimum 10000 pixel / m2 |
| 30 | Volume 2, 3.17 | 56 | VaMS.010, Refresh Rate - Minimum 800 Hz | VaMS.010, Refresh rate Minimum 1900 Hz |
| 31 | Volume 2, 3.17 | 56 | VaMS.012, Native brightness: Minimum 5000 nits | VaMS.012, Brightness: Min 7500 cd/m2 |
| 32 | Volume 2, 3.17 | 56 | VaMS.014, Pixel Requirements: The pixel pitch shall be not more than 16 mm. | VaMS.014, Pixel Requirements: The pixel pitch shall be 10 mm or better |
| 33 | Vol.2/ 3.17 VaMS.016 | 56 | LED Configuration: R/G/B 3 in 1 SMD | LED Configuration: 1R/1G/1B DIP |
| 34 | Volume 2, 3.17, D Surveillance Camera | 52 | PTZ (HD), PTZ.009, Tilt Range: Manual/programmable; speed: 300°/sec; angle :0-180° or Proportional speed needs to be provided | PTZ (HD), PTZ.009, Tilt Preset speed: Minimum 180 degree / sec, Pan: 240°/s endless/continuous |
| 35 | Volume 2, 3.17, F, IPDC.018 | 51 | Casing: IP 66 vandal resistant | Casing: IP 66 vandal resistant, IK 10 |
| 36 | Volume 2, 3.17 | 68 | The OEM should have deployed the solution in India | The OEM should have deployed the solution in India or globally. |
| 37 | Volume 2, 3.17, W, Body Worn Camera, 2 CCTV Camera | 71 | Shall be embedded with wide angle CMOS image sensor of min. 16 MP | Shall be embedded with wide angle CMOS image sensor of (1/2.8) inch sensor size (minimum), to standardize the minimum sensor size in order to get sufficient light per pixel. |
| 38 | Volume 2, 3.17, W, Body Worn Camera, 17 Physical Button | 72 | Button for IP based, Power On/Off, Video recording, Audio recording, Snapshot, Event tag | Button for IP based PTT (Push to Talk), Power On/Off, Video recording, Audio recording, Snapshot, Event tag. (PTT to have functionality of sending voice, text and images from one Body worn camera (BWC) to single BWC or group BWC's.) |
| 39 | RFP Volume 2, 5.7.8, Digitization of Satellite Imagery, Updating & capturing of various layers | 93 | Bidder will prepare an up-to-date large-scale base map (Scale 1:2000) of all the wards/zones of Agra City using satellite imageries and then will prepare a new Database using the existing Database available with Agra Municipal corporation, as unified Geo-spatial Data with infrastructure details. | Bidder will prepare an up-to-date large-scale base map (Scale 1:2000) using 0.3 m or better Resolution Satellite Imagery of all the wards/zones of Agra City using satellite imageries and then will prepare a new Database using the existing Database available with Agra Municipal corporation, as unified Geo-spatial Data with infrastructure details. |
| 40 | RFP Volume 2, 5.6.1. Base Map Creation | 89 | Procure and supply 0.5 m or better Resolution, Ortho rectified, Geo Referenced Satellite Image | Procure and supply 0.3 m or better Resolution, Ortho rectified, Geo Referenced Satellite Image |
| 41 | Volume 1, VWCCC.013 | 271 | Diagonal: 50 " | Diagonal: 50" or 70" (MSI to decide the best-suited solution for the ASCL CCC room.) |

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| 42 | Volume 2, 7.1 | 122 | Disaster Recovery Centre will be 50% of Data Centre Site; it is mandatory to have two separate physical locations and distance itself through Seismic Zones. | Disaster Recovery Centre will be 50% of Data Centre Site; it is not mandatory to have two separate physical locations and distance itself through Seismic Zones. |
| 43 | Volume 2: Scope of Work 9.10.11. Field Responder Mobile | 251 | Field Responder Mobile: Provide Integrated Mobile Application for capturing real-time information from the field response team using Mobile-Standard Operating Procedure. Overall Integrated Operations Platform should account for below solution components, City Tenant activation license with one lakh device connection | Field Responder Mobile: Provide Integrated Mobile Application for capturing real-time information from the field response team using Mobile-Standard Operating Procedure. Overall Integrated Operations Platform should account for below solution components, City Tenant activation license with 50 device connection |
| 44 | Volume 2 I. Variable Message Sign Board – VaMS | 55 | Electronic-High Luminosity wide viewing angle oval LEDs (Only Nichia LED) for outdoor ambient light shall be used. | Electronic-High Luminosity wide viewing angle oval LEDs (Nichia LED or equivalent life time of 1 lac hours) for out-door ambient light shall be used. |
| 45 | Volume 2, 7.11 Physical DC/DR Technical Specification, DC.007 | 137 | Fire Protection: High Sensitive smoke detectors, fire suppression systems | High Sensitive Smoke Detectors, Fire Suppression System. The fire suppression system shall include and not be limited to gas release control panel, UL/FM/VDS listed and PESO approved seamless cylinders, discharge valve (with solenoid and pneumatic actuator) as the case may be, discharge pipe, check valve and all other accessories required to make a complete operation system meeting applicable requirements of NFPA 2001 (2012 edition) standards and installed in compliance with all applicable requirements of the local codes and standards. The system shall be properly filled and supplied by a UL/FM/VDS listed OEM (Original Equipment Manufacturer) and PESO approved filling plant. |
| 46 | Volume 2, 13.1.1.A.2 | 303 | Detailed Project Study for all ICT solution: a) Detailed Survey of identified Sites, Network and Power Requirements b) Hardware and Software Deployment plans c) Detailed Project Plan including Operations management, Contract management, Risk Management, Information Security and Business Continuity d) FRS, SRS, SDD Documents for all work streams & components | Detailed Project Study for all ICT solution: a) Detailed Survey of identified Sites, Network and Power Requirements b) Hardware and Software Deployment plans c) Detailed Project Plan including Operations management, Contract management, Risk Management, Information Security and Business Continuity d) FRS, SRS, SDD Documents for all work streams & components e) Conops Handbook defining the to-be processes |

Annexure A: Additional Functional Requirement for Adaptive Traffic Control System (ATCS)

1. MSI to ensure that the traffic signal controllers are certified for all the environment conditions as per City and shall be complied or certified as per IEC-60068.
2. Overall solution of ATC should be intelligent enough to handle non-lane based traffic in mixed flow conditions. Since, the lane change can happen even after the stop-line (in the middle of the junction). MSI to furnish details of how do they address (a) non-lane based driving (b) mixed traffic flow condition.
3. MSI to address the situation for minimum 'stop delay' in a corridor through traffic in the main arterial where traffic reaches the junction and a queue built by the right-turning or left-turning traffic from the previous junction.
4. During technical evaluation, it would be expected for MSI to provide details on kind of calibration being considered for Adaptive Traffic Control System (ATCS).
5. The traffic signal controllers shall operate in Vehicle Actuated Mode (all stage pre-emption) in fallback mode (during communication failure / junction isolation). MSI is requested to demonstrate this feature during technical evaluation.
6. The traffic signal controller should support 'Emergency Service Vehicle Priority'.
7. MSI shall share system generated graphs / plots / reports of ATCS during the technical evaluation.

Annexure B: Additional Scope for Smart Public Transport System

1. Scope of Work

- MSI shall install Cameras, GPS based Automated Vehicle Locator System (AVLS), Passenger Information System and Emergency Button in city Bus and integrate with ICCC
- MSI should also provide a Mobile / Web based information to passengers about the real-time location of bus.

2. Functional Specifications - Vehicle Location System and Passenger Information System

- a) Ability to locate a bus at a given time in its track to estimate its arrival/departure time at the next destination, based on traffic density, distance, speed, bus occupancy, run-time information from the previous bus arrival time for the same location etc.
- b) Ability to receive SOS and alerts from moving / stranded buses en-route
- c) Facility to track defined vs. actual movement of vehicles, capture deviations if any.
- d) Facility to view vehicle movement in a real-time mode on GIS maps
- e) Ability to provide dynamic location specific information as the vehicle approaches bus stop/station for the benefit of passengers
- f) Facility to generate information such as travel time estimation, average time at bus stop, passenger traffic at different location, alerts on exceptions, and logging of the journey details of the bus for each trip
- g) Facility for citizens to access and view position / location information on GIS maps near real time through web interface with historic data displayed on maps
- h) Facility for providing current information location on demand
- i) It should enable operational managers to create locations, routes, schedules Vehicle service alerts for service and maintenance
- j) Provide daily Maintenance Schedule, pending Insurance and pending Pollution Check status
- k) Vehicle fleet summary dashboard – quick view on vehicle fleet performance based on fuel Consumption, it should provide average fuel consumed per kilometre.
- l) System should also be able to record bus break down instances along with other exception recording/ actions (over-speeding, off-route detection, non- stoppage at bus stops, trip cancellation)
- m) System should generate reports
 - Depot, vehicle and route wise reports
 - Missed stops reports
 - Route deviation reports
 - Trip status reports (Cut/Short/Missed)
 - Distance travelled
 - Register a bus on unscheduled route from backend on real time basis

3. Functional Specifications – Mobile Application

- a) Real-time bus tracking system (shall support 3rd party application provider)
- b) Complete information on bus routes and stops to commuters
- c) Real-time ETA for a combination of bus route and stop
- d) Real-time tracking for the bus on the map
- e) Mobile Application for IOS, Android and Windows mobile devices
- f) MSI shall develop mobile apps which shall include a mobile application to help passengers to get information about the buses, search and view bus schedules on various routes and deliver ETA based on their real time location.
- g) System shall show the time table of the buses, fare structure etc.

4. Module: Multi Fleet System

Information about all running and idle vehicle with following information: Driver Name, Contact Number, Speed, Current Location, Schedule time to reach next destination, No. of trips till now, Current trip number, No. of Delayed trips, Current trip status

- All-in and simultaneous management of several fleets. The sharing of resources (communications system, control centre and human management resources) creates beneficial economies of scale.
- A section which enables user to have a full view of all activities of the fleet on a single Console. The dashboard shall form part of the UI delivery which shows all key performance and tracking indicators enabling control centre staff and management team of Public Transport to take proactive Decision to manage Transportation operations in a highly efficient manner.
- Application development and customization of screens, forms, reports and queries of data specifically include:
 - Locating a particular bus in the fleet
 - Auto pan facility for tracking a particular bus
 - Sending online messages to an individual bus or group of buses selected on a map

5. Module: Live Vehicle and Real Time Tracking

- Integration of GPS with digitized map for tracking of vehicles on a real time basis including distress messaging between vehicle and control station.
- To monitor whether the buses are adhering to its scheduled route and time table through-out the route and identify if there are any deviation.
- Real time two way messaging between buses & Central Control Room.
- To monitor whether the buses halt at all the scheduled bus stops.
- Generating messages pertaining to speed violation, skipped bus stops etc., to Public Transport officials at the Central Control Station, online along with the Geo-graphical position and the violated vehicle number

6. Module: Reports & MIS

- Generation of exception reports like deviation from schedule route, timing, Missing Bus stops, Punctuality factor, etc. based on captured vehicle data
- Calculation of actual distance (in kms) travelled by vehicle, using map
- Reports:
 - Speed Log
 - Stoppage Log
 - Summary Report Day Wise Vehicle Wise
 - Performance Day Wise Vehicle Wise
- Statistics: Monthly Performance
- Alerts:
 - Fleet Summary
 - Vehicle Status
 - Speed Violation
- Real-time application data delivery for PIS

Annexure C: Additional GIS Requirement for Mobile Application

Survey Mobile Application Feature

1. Offline Working
2. Native android application so seamless support to phone hardware like GPS, Camera etc.
3. Offline Spatial and non-spatial data viewing and update.
4. GIS server attribute data display on geometry (offline support)
5. GIS layer on off
6. Zoom in-zoom out functionality
7. Current location of surveyor
8. GPS navigation
9. Add spatial feature
10. Spatial Feature (Point, line, polygon) creation
11. Local language support for data viewing, data entry
12. Local language searching and indexing for all attribute data.
13. Image compression and conversion to base64 for saving in database
14. Distinct form for Open Land, Building and Floor.
15. Video capture
16. Laser distance meter integration
17. Mobile application integration with DGPS
18. IMEI integration for data security and offline authentication
19. Resurvey module up to unit level.

Survey Mobile Server-Portal Feature

20. User management module for addition and updation of surveyor, supervisor and administrator and workflow integration (Geographically boundary wise area allocation)
21. Project monitoring module with Gantt chart
22. Survey allocation and management module
23. Map module for spatial data viewing, querying, exploration and allotment to surveyor
24. Report Module includes charts, maps, attribute query, image viewer and downloading functionality with local language support
25. Data QA-QC module
26. Resurvey allotment module to surveyor up to unit level
27. Attribute data upload functionality with local language support
28. OGC standard GIS server integration for consuming wms, wfs, wmts services
29. Form builder for addition and updation in mobile forms for data capturing utility like text box, drop down box, multi-line text box, radio button, checkbox, file upload, camera utility, Laser Distance meter integration
30. Spatial query support

Annexure D: The use cases for Property and Person of Interest has been defined as under.

- The AI solution shall implement all the use cases such the algorithms can be deployed on any commercial off the shelf camera/device/computer/server.
- These AI functionality is required as features of the overall proposed system which would include Camera (and other edge devices) or Server systems (VMS, ITMS etc) & ICCS inclusive of AI platform.
- The below use cases should be supported by the overall system as features.

| Sr. No | Functionality | Channels | Detailed use case |
|-----------------------------|----------------------------------|----------|---|
| Property of Interest | | | |
| 1 | Camera Tampering | All | <ol style="list-style-type: none"> 1. Alert to be generated when camera is tampered by way of change of Field of view of camera, blurring of view, blocking of view by cloth or obstruction, camera disconnection, blinding of camera by laser or flashlights. 2. Once alert is generated, the incident should be flagged and system should have the capability to trace the person responsible for the sabotage in other cameras and send notification to nearest Police asset on the field about the person of interest. The track/trace of the person shall be shown on the map. |
| 2 | Tracking vehicle across cameras | 172 | <ol style="list-style-type: none"> 1. Tagging of vehicles as the pass through ANPR cameras 2. Tracking of blacklisted vehicles across multiple cameras 3. Integrated map for visualisation, co-relation and tracing the path of vehicle |
| 3 | Speed of car/vehicle | 110 | <ol style="list-style-type: none"> 1. Detection of speed of the vehicle 2. Flagging an incident of speed violation if the speed of vehicle is above a given threshold 3. Provision to e-challan the defaulter once confirmed by the operator 4. Predictive analytics to know the probability of speed violations in a given geography and time, so that speed interceptor vehicles can be directed to the challan the violators. |
| 4 | Helmet detection on two wheelers | 173 | <ol style="list-style-type: none"> 1. Detection of violation and flagging it to the Control room. 2. Provision to e-challan the defaulter once confirmed by the operator 3. Predictive analytics to know the probability of violations in a given geography and time, so that Traffic police can be directed to the challan the violators. |
| 5 | Wrong way driving detection | 31 | <ol style="list-style-type: none"> 1. Detection of violation and flagging it to the Control room. 2. Provision to e-challan the defaulter once confirmed by the operator 3. Predictive analytics to know the probability of violations in a given geography and time, so that Traffic police can be directed to the challan the violators. |
| 6 | Illegal turn by vehicle | 31 | <ol style="list-style-type: none"> 1. Detection of violation and flagging it to the Control room. 2. Provision to e-challan the defaulter once confirmed by the operator 3. Predictive analytics to know the probability of violations in a given geography and time, so that Traffic police can be directed to the challan the violators. |

| | | | |
|----|--|-----|---|
| 7 | Triple riding on two wheeler | 173 | <ol style="list-style-type: none"> 1. Detection of violation and flagging it to the Control room. 2. Provision to e-challan the defaulter once confirmed by the operator 3. Predictive analytics to know the probability of violations in a given geography and time, so that Traffic police can be directed to the challan the violators. |
| 8 | No seat belt | 25 | <ol style="list-style-type: none"> 1. Detection of violation and flagging it to the Control room. 2. Provision to e-challan the defaulter once confirmed by the operator 3. Predictive analytics to know the probability of violations in a given geography and time, so that Traffic police can be directed to the challan the violators. |
| 9 | Smoking in car while driving | 25 | <ol style="list-style-type: none"> 1. Detection of violation and flagging it to the Control room. 2. Provision to e-challan the defaulter once confirmed by the operator 3. Predictive analytics to know the probability of violations in a given geography and time, so that Traffic police can be directed to the challan the violators. |
| 10 | Use of mobilephones while driving | 25 | <ol style="list-style-type: none"> 1. Detection of violation and flagging it to the Control room. 2. Provision to e-challan the defaulter once confirmed by the operator 3. Predictive analytics to know the probability of violations in a given geography and time, so that Traffic police can be directed to the challan the violators. |
| 11 | Graffiti | 50 | <ol style="list-style-type: none"> 1. Detection of graffiti in a given area of interest. 2. Once verified and confirmed by operator that it is a rouge person, the system shall be able to track the person across various cameras and to find the origin of such person. The track/trace of the person shall be shown on the map. |
| 12 | Vandalism | 50 | <ol style="list-style-type: none"> 1. Detection of vandalism in a given area of interest. 2. Once verified and confirmed by operator that it is a rouge object, the system shall be able to track the person across various cameras and to find the origin of such person. The track/trace of the person shall be shown on the map. |
| 13 | Abandoned object detection | 150 | <ol style="list-style-type: none"> 1. System should detect an abandoned object like car/vechicle on the road in the configured field of view of the camera. 2. System should be able to find in one click when this object of interest entered the scene of interest for the first time. 3. Once verified and confirmed by operator that it is a rouge object, the system shall be able to call it as blacklist and be able to search metadata of the car/vechicle across the city checkpoints and ANPR camera databases for timestamp of entry and associated videos. 4. The system shall be able to track the person who left the object across various cameras and to find the origin of such person. The track/trace of the person shall be shown on the map. |
| 14 | Object Classification or Vechicle attributes detection (colour/make/model) | 50 | <ol style="list-style-type: none"> 1. The system should classify objects into vechicles (colour/make/model), Humans (male/Female/Children) 2. The system shall allow different data analytics to be applied on such object classified data. Eg, % of children Vs Adults in a identified camera/area, or ratio of 4 wheelers Vs 2 wheelers in a given segment of time. |
| 15 | Tripwire/intrusion detection | 50 | <ol style="list-style-type: none"> 1. detection of intruder entering/exiting a given area of interest. 2. Once verified and confirmed by operator that it is a rouge object, the system shall be able to track the person across various cameras and to find the origin of such person. The track/trace of the person shall be shown on the map. |

| | | | |
|---------------------------|---|-----|---|
| 16 | Improper/Illegal Parking | 31 | <ol style="list-style-type: none"> 1. Detection of violation and flagging it to the Control room. 2. Provision to e-challan the defaulter once confirmed by the operator 3. Once verified and confirmed by operator that it is a rouge object, the system shall be able to call it as blacklist and be able to search metadata of the car/vehicle across the city checkpoints and ANPR camera databases for timestamp of entry and associated videos. 4. The system shall be able to track the person who left the object across various cameras and to find the origin of such person. The track/trace of the person shall be shown on the map. 5. Predictive analytics to know the probability of violations in a given geography and time, so that Traffic police can be directed to the challan the violators. |
| 17 | Authorised vehicle entry | 100 | <ol style="list-style-type: none"> 1. Whitelisted cars/vechicles to be approved as authorised |
| 18 | Automatic Anomaly detection | 50 | Detecting abnormalities, threshold and KPI violations. Can be done through ICCC/Smart City platform |
| Person of Interest | | | |
| 1 | Loitering Detection | 50 | <ol style="list-style-type: none"> 1. detection of vandalism in a given area of interest. 2. Once verified and confirmed by operator that it is a rouge object, the system shall be able to track the person across various cameras and to find the origin of such person. The track/trace of the person shall be shown on the map. |
| 2 | Face Recognition | 150 | Detailed description of the system is elaborated in the RFP |
| 3 | Person tracking over network of cameras | 250 | <ol style="list-style-type: none"> 1. Tracking of person based on image captured from the proposed cctv footage, eg - pause the video and track the person of interest in multiple CCTV cameras and stored video footage of 30 days. 2. tracking of person based on verbal clues given to the central control room eg, man having beard, dark skin, with white shirt and blue jeans and black jacket. The system shall trigger search and tracking based on attribute based search. 3. Tracking of people based on Full body photographs received by the police control room. 4. Tracking and detection of people based on Facebook or social media profiles on camera footage as well as recorded video footage. |
| 4 | People counting | 50 | <ol style="list-style-type: none"> 1. Counting people in given area of interest or getting % occupancy by people or crowd in given scene of interest. 2. Flagging incident incase crowd level is above defined threshold. |
| 5 | Person collapsing | 50 | <ol style="list-style-type: none"> 1. detection of incident and flagging in Control room for medical response if required. |
| 6 | Incident detection : Fight (action) | 50 | <ol style="list-style-type: none"> 1. detection of fight in a given area of interest. 2. Once verified and confirmed by operator that it is a rouge situation, the system shall be able to track the person across various cameras and to find the origin of such person. The track/trace of the person shall be shown on the map. |
| 7 | Person waving (gesture recognition) | 25 | Requirement to be defined as per the need of the client |
| 8 | Dwell time of person of interest | 25 | Requirement to be defined as per the need of the client |

| | | | |
|----|--|------------------------------|--|
| 9 | Threat detection | 50 | <ol style="list-style-type: none"> 1. occurrence of detection of more than 1 incident in predefined zone or a pattern of incidents from more than one sensor including camera, gunshot detection sensor, panic button sensor, or video analytic alert shall be considered a threat. 2. System shall be able to link the multiple incidents to the same threat automatically using co-relation. 3. Operator shall be able to deattach a given incident from a threat level scenario and also be able to attach sub-incidents into a given threat level scenario. 4. Based on all the alerts received by the system, the system shall always operate in given threat level, and deploy SOP's which are congruent to the threat level at which the control room is operating. Threat level can be enhanced at times of VIP visits where the SOP's will be congruent to the level of threat anticipated by the organisation. |
| 10 | Forensic Analytics | Section added in Corrigendum | Detailed description of the system is elaborated in the RFP |
| 11 | Gender identification : Male or Female | 25 | Detailed description of the system is elaborated in the RFP |
| 12 | Hair Identification : Long or Short | 25 | Detailed description of the system is elaborated in the RFP |

Annexure E: Indicative Security Solution

Proposed Cyber Security Solutions should be fully compliant to MoUD guidelines (Circular reference number K-1s016/6U2016-SC-I) and the people, process & technology deployed should be provisioned accordingly. Following are the minimum security solutions to be proposed by the bidders as part of the solution. The sizing and the capacity of the equipment should commensurate to the overall business requirement and technical solutions proposed.

I. WAF – Web Application Firewall

1. Solution should be deployed in HA (High Availability) mode and protect the web applications from attacks. WAF solution should filter the HTTP/S traffic based on the rules set defined. Proposed WAF should be able to address top 10 OWASP vulnerabilities.
2. Proposed solution shall prevent the following attacks (but not limited to): Brute force, Access to predictable resource locations, Unauthorized navigation, HTTP request format and limitation violations (size, unknown method, etc.) and File upload violations
3. Solution should be able to inspect web application output and respond (allow, block, mask and/or alert) based on the active policy or rules, and log actions taken.
4. Support dynamic source IP blocking and should be able to block attacks based on IP source.
5. Support automatic updates (if required) to the signature database, ensuring complete protection against the latest application threats.
6. Proposed WAF should be from different OEM than Firewalls or Load Balancers for better security
7. Should have positive security model with machine learning capabilities to detect and prevent anomaly in application traffic and unknown attacks. Machine learning should be based on true ML algorithms, and not just automation of dynamically learnt rules.
8. Should have 4-10Gig ports and storage capability of 2 TB
9. Proposed solution should have integrated Redundant power supply

II. Anti-DDOS

1. The Anti DDoS module is expected to constantly monitor the behavior of the application visitors and prevent common application layer attacks.
2. The proposed solution should detect and mitigate both traditional network- layer DDoS attacks and more advanced application layer attacks.
3. The proposed solution should have the capability to be configured in detect as well as protect mode.
4. The proposed solution should prevent suspicious outbound traffic for threats and blocking malicious traffic.
5. The proposed solution must support the ability to blacklist a host, domain, URL
6. The proposed solution must provide the ability to block bot-originated traffic according to system- supplied signatures
7. The Solution must have 50K SSL TPS for RSA 2K key, 35K SSL TPS for ECDSA P25 with 45 Gbps SSL Throughput
8. The DDoS solution should be a dedicated hardware with dual power supply . The appliance should have 8 X 10GE SFP+ ports.

III. Anti -APT Threat Prevention

1. Solution must be custom built Anti-APT Appliance and should integrate with network perimeter security component devices like firewall/UTM , and IDS/IPS. The proposed threat prevention & internet NGFW OS should not have any reported vulnerability in last 3 years.
2. The proposed solution should able to work with the existing technologies for advance threat protection through web & email protocol. For email APT solution should act as MTA for extraction of active malicious active content and provide real time threat prevention.
3. The proposed solution should support to monitor traffic from multiple segments/Devices.

4. The proposed solution should have capabilities to configure files, IP, URLs and Domains to Black list or white list.
5. The Proposed solution must provide a web service interface/API for customer to customize integration.
6. The Proposed solution should provide correlated threat data such as: IP addresses, DNS domain names, URLs, Filenames, Process names, Windows Registry entries, File hashes, Malware detections and Malware families through a portal.
7. The proposed solution must be able to provide intelligence portal for malware information, threat profile and containment remediation recommendations where applicable.
8. Anti-APT appliance shall have integrated redundant power supply and minimum of 4 GE & 2-10GE ports and 2x10GE bypass card for fail open configuration. This shall integrate with NextGen Firewall & should support SSL Inspection.
9. The APT appliance should have real world effective throughput of 30K files per day and scalable to support 80k by stacking additional appliance
10. The manufacture of the offered Anti-APT threat prevention solution shall have successfully completed 2017 NSS breach prevention (BPS) test with security effectiveness of 99% and above. Breach prevention should utilize malware identification – using signature, heuristics -, network traffic analysis, sandboxing, threat emulation & extraction, centralized management, response mechanism, robust logging & monitoring mechanism for cyber threats.

IV. SIEM - Security Information & Event Management

1. The SIEM solution is expected to collect logs from security and network devices, servers and application security logs.
2. The proposed solution must have an automated backup/recovery process.
3. In the proposed solution, all logs should be Authenticated (time-stamped across multiple time zones) encrypted and compressed before transmission.
4. The proposed solution should provide time based, based store and forward feature at each log collection point
5. The proposed solution should have the ability to gather information on real time threats and zero day attacks issued by anti-virus vendors or audit logs and add this information as intelligence feed in to the SIEM solution via patches or live feeds
6. The proposed solution should generate the following reports (but not restricted to): User activity reports, Configuration change reports, Incident tracking report, Attack source reports etc. In addition, the proposed solution should have a reporting writing tool for development of any ad-hoc reports.
7. The proposed solution should provide the ability to monitor and alert on non-compliance events in real-time and provide necessary reports and dashboards. Dashboard should support reporting for consolidated relevant compliance across all major standards and regulatory requirements.
8. Should provide out of the box reports for PCI-DSS, HIPAA, SOX, NERC, FISMA, ISO, GLBA, GPG13, and SANS critical controls
9. The proposed solution should have a mechanism to track security incidents across a wide range of relevant attributes (i.e. IP addresses, usernames, MAC address, log source, correlation rules, user defined, etc.).
10. The proposed solution should be possible to define purging and retention rules for log storage & should have 60TB storage.
11. The proposed solution should support creation of automated incident management workflows to track incident from creation to closure, provide reports on pending incidents.
12. Proposed solution should be provisioned for 100 collector points, 10000 EPS and shall be scalable to 20,000
13. Proposed solution should show raw packets and logs correlation on a single dashboard from same OEM along with management, administration and monitoring from single unified GUI for detecting attacks emerging from logs and raw packets data.

V. DLP – Data Leakage Prevention

1. DLP for Endpoints – Proposed solution should address the risks associated with the storage and use of confidential /sensitive data on laptops and desktops across organization. It should prevent confidential/sensitive files from downloading, copying to and from any kind of portable storage device & removable media. Proposed solution should monitor data being copied and pasted from the clipboard to prevent confidential/sensitive data from being pasted to specific application.
2. DLP for Web – Proposed solution must block or remove sensitive data from outbound web communications if they violate security policy.
3. DLP for Network – Proposed solution must passively inspect network traffic for confidential data that is being sent in violation of security policy.
4. DLP for Files shares, Databases and Document Repositories (Storage) – Proposed solution must discover stored confidential data throughout the enterprise; monitor the ownership and use of stored data; and protect sensitive data according to centrally administered policies.
5. Proposed solution is expected to be deployed in HA (High Availability) mode.
6. The Solution should not use any third party proxy Server to provide DLP functionality
7. The solution must have identity and role based policy capability.
8. The solution should be capable of segmentation of duties, automatic access control.
9. The Solution should have comprehensive auto-classification methodology.
10. The Solution should be built in automated policy synthesis mechanism and ability to monitor APT

Annexure F: Amendments of Technical Specifications

1. Amendment of Server Load Balancer Specifications as requested:

| Server Load Balancer | | |
|----------------------|---|------------|
| Sr No. | Minimum Technical Specification | Compliance |
| 1 | The Load Balancer shall deliver the high availability required by modern data centers. It should support Active/Passive or Active / Active HA configurations. The Load Balancer shall automatically synchronize configurations between the pair and automatically failover if any fault is detected with the primary unit. The device should be multi-tenanted Network Function Appliance with support upto 16 virtual instances. Should have internal redundant Power supply with 2 TB hard disk and support other 3rd party and open source virtual network Functions like SSL VPN, web application firewall etc. | |
| 2 | The Load Balancer shall support offloading of SSL connections and should deliver 20 Gbps of SSL throughput on 2048 key | |
| 3 | To maximize outbound bandwidth, the Load Balancer shall automatically compress content to minimize network traffic between application servers and the end user. The appliance should support 5 Gbps of compression throughput. This capability shall be compatible with most modern browsers, requiring no additional software | |
| 4 | The server load balancer should deliver 6 Gbps of Layer 7 throughput | |
| 5 | The server load balancer should deliver 18 Million concurrent sessions | |
| 6 | The server load balancer should cater up to 20,000 SSL connections per second on 2K key | |
| 7 | Local Application Switching, Server load Balancing, HTTP,TCP Multiplexing, HTTP Pooling, HTTP Pipelining, Compression, Caching, TCP Optimization, Filter-based Load Balancing, Transparent Deployments, Content-based Load Balancing, Persistency, HTTP Content Modifications, Band Width Management(BWM), Support for connection pooling to TCP request, Support for distributed denial-of-service (DDoS) protection | |

| | | |
|---|---|--|
| 8 | The solution should support XML-RPC for integration with 3rd party management and monitoring. Should also support SAA, SAML, Hardware binding and AAA support along with SSO. Solution must support machine authentication based on combination of HDD ID, CPU info and OS related parameters i.e. mac address to provide secure access to corporate resources. | |
|---|---|--|

2. Amendment of Link Load Balancer Specifications as requested:

| Link Load Balancer | | |
|--------------------|--|------------|
| Sr No. | Minimum Technical Specification | Compliance |
| 1 | The solution should aggregate WAN links from a single or multiple ISPs, and support up to 20 WAN links for inbound/outbound traffic load balancing & redundancy. WAN Links must support IPv4 or IPv6 addressing or both simultaneously. Proposed device should be multi-tenanted Network Function Appliance with support upto 16 virtual instances. Should have internal redundant Power supply with 2 TB hard disk and support other 3rd party and open source virtual network Functions like WAN Optimization, DDoS etc. | |
| 2 | Must support IP connectivity across all kinds of network infrastructure, including Ethernet (10Mbps/100Mbps/1 Gbps - copper or fiber) | |
| 3 | Should support minimum 6 Gbps of WAN links & scalable by 50% | |
| 4 | Should support minimum 2 Million concurrent connections & 500,000 Connections per second | |
| 5 | The solution should be able to provide at least 8x 10G SFP+ SR interfaces from day one | |
| 6 | The solution should support user-defined IP and Service Group functions for configuring firewall, bandwidth management and routing policies. | |
| 7 | Should support XML-RPC for integration with 3rd party management and monitoring. Should also support SAA, SAML, Hardware binding and AAA support along with SSO. Solution must support machine authentication based on combination of HDD ID, CPU info and OS related parameters i.e. mac address to provide secure access to corporate resources. | |
| 8 | The solution should support Multi-homing function for inbound IPv4 and/or IPv6 traffic Load Balancing and fault tolerance across up to 20 WAN links by enabling DNS relay or DNS authoritative server function. | |
| 9 | Should have IPV6 support with IPv6 to IP4 and IPv4 to IPv6 translation and full IPv6 support. Also should have IPV6 support with DNS 6 to DNS 4 & DNS 4 to DNS 6 translation based health check for intelligent traffic routing and failover | |
| 10 | The solution should support DHCP and DHCPv6 server function | |
| 11 | The Should provide comprehensive and reliable support for high availability with Active- active & active standby unit redundancy mode. Should support both device level and VA level High availability | |
| 12 | The solution should support VRRP for HA interconnection over network. | |

3. Laptop Specifications:

- Processor - Latest generation Intel Core i5 (2 Ghz) or higher OR AMD (2 Ghz)
- Processor or higher OR Equivalent 64 bit x86 processor
- Display - Minimum 14" Diagonal TFT Widescreen with minimum 1366 x 768 resolution (16:9 ratio)
- Memory - 8 GB DDR3 RAM @ must be free for future upgrade
- Hard Disk - Minimum 1TB SATA HDD @ 5400 rpm
- Wireless Connectivity - Wireless LAN - 802.11b/g/n/ Bluetooth 3.0
- Audio - Built in speakers
- Operating System - Pre-loaded Windows 8.1 (or latest) Professional 64 bit, licensed copy with certificate of authenticity (or equivalent authenticity information) and all necessary and latest patches and updates. All Utilities and driver software, bundled in CD/DVD/Pen-drive media
- Accessories - Laptop carrying Back-pack. It must be from same OEM as laptop
- Other pre-loaded software (open source/free) - Latest version of Libre-office, 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.

4. Mini PC Specifications:

- Platform Intel® Apollo Lake Celeron® N3350 SOC
- Memory 2 x SO-DIMM Memory, DDR3L 4gb expandable Up to 8GB
- Expansion Slot 1 x M.2 for SSD (SATA), Storage Support 1 x eMMC 32GB/64GB
- Support 1 x 1 TB 2.5" HDD
- Audio 1 x Combo Jack, 1 x Digital Mic, LAN 2 x Gigabit LAN, USB
- 3 x USB 3.1 Gen1 Type-A Ports, 1 x USB 3.1 Gen1 Type-C Port
- Video Output 1 x HDMI Port (HDMI 1.4), 1 x mDP Port
- Wireless Intel® WiFi 802.11ac & Bluetooth 4.0
- PCB Size 115 x 111 mm, Dimension 117 x 128 x 51 mm
- VESA Supports 75mm / 100mm
- Adapter Input: AC 100-240V, Output: DC 19V / 3.42A
- OS Support Ubuntu 16.04 LTS, Pre-loaded Windows 8.1 (or latest) Professional licensed copy with certificate of authenticity (or equivalent authenticity information) and all necessary and latest patches and updates. All Utilities and driver software, bundled in CD/DVD/Pen-drive media
- Windows 10, Accessory 1 x Power adapter
- 1 x VESA Bracket, 6 x VESA Mount Screws
- Quick Guide & Driver DVD

5. All in One Printer Specifications

- Print speed black: Normal: Up to 22 ppm or above
- First page out (ready)
- Black: As fast as 7.3 sec
- Duty cycle (monthly, A4)
- Up to 20,000 pages 8
- Print technology: Laser
- Print quality black (best): Up to 600 x 600 dpi
- Print Resolution Technologies: 600, 1200
- Print languages: PCLmS, URF, PWG
- Display: ICON LCD
- Processor speed: 600 MHz

Annexure G: Revisions of Technical Specifications

- Revision wherever applicable is provided in below table and all other specifications of the original RFP document within each of the components and sections shall remain unchanged.

| SAN Storage Minimum Specifications | | | |
|------------------------------------|---------------------------|---|--|
| Sr. No. | Item | Original Description | Revised Specification |
| SAN.004 | | The offered Storage controller should have minimum 6 GB cache per controller and support cache backup mechanism to protect the data on cache to SSD in case of power failure. | The offered Storage controller should have minimum 32 GB cache per controller (total 64 GB) and support cache backup mechanism to protect the data on cache to SSD or de-stage to disk in case of power failure. |
| SAN.007 | Host Interface | The offered storage shall support for minimum 8 no. of 16Gbps Fiber channel host interfaces. | The offered storage shall support for minimum 8 or more nos. of 16Gbps Fiber channel host interfaces and should support scalability to 32Gbps Fiber channel host interfaces. |
| SAN.008 | | The host interface module shall be inter-changeable or support 10Gbit or iSCSI or SFP+ interface and 12Gbps SAS ports if required. | The host interface module shall be inter-changeable or support 10Gbit or iSCSI or SFP+ interface |
| SAN.010 | Others | Should support Replication and Snap license | Remote Replication along with full volume copy and Snapshot of the stored data to another logical drive for backup purposes, within and across connected external storages. Appropriate Licenses should be proposed with the storage for the same. |
| SAN.011 | LUN Size | Minimum 64TB or more and shall have no limitation on the LUN size | Up to 60TB LUN size |
| SAN.012 | Protocol Supported | SNMP, SSL, SSH, SMTP, SMI-S Provider, HTTP(s) | SNMP, FC, iSCSI |
| SAN.014 | Shock & Vibration | Shock, Operational - 3Gs for 11ms, 5 pulses each direction, rail mounted | Deleted |
| SAN.015 | | Shock, Non-Operational - 10Gs for 11ms, half sine, 1" drop to hard unyielding surface per NEBS, GR-63-CORE Unpackaged Equipment Shock Criteria (4.3.2) | Deleted |
| SAN.016 | | Vibration, Operation - 5Hz to 500Hz, 0.1436 Grms flat spectrum | Deleted |
| SAN.017 | | Vibration, Non-Operational - 3-365-3Hz, 1.22 Grms, Z-axis, 0.85 Grms, X- & Y-axis shaped spectrum | Deleted |
| SMS | Storage Management System | | Technical Specification Stands Deleted. The storage solution should be proposed with software to enable movement of data from Primary SAN Storage to Secondary Storage, in which Secondary Storage shall keep the copy of Primary Storage Video Surveillance and other critical Data as per |

| | | |
|---|---------------------------------------|--|
| | | the Retention Policy (flagged Data) |
| TL | Archived Enabled TAPE Library | Technical Specification Stands Deleted. Tape Library or Disk based Secondary Storage System shall be proposed with the required Usable Capacity in RAID 6. Should Support WORM, self-healing and data Encryption for long term tamper proof data preservation and protection against data corruptions. Remote replication, monitoring and manageability also to be provided as a part of the solution, along with provision for restoration or online accessibility of the data in the secondary storage. |
| TOR | TOR Switch | Technical Specification Stands Deleted. |
| | | |
| Volume 2, Page 281, IPTCS.001 to IPTCS .028 | IP Telephony - Core Telephony System | Technical Specifications Stands Deleted – Duplicate |
| Volume 2, Page 287, IPVO.001 to IPVO .009 | IP Telephony - Voice Telephony System | Technical Specifications Stands Deleted – Duplicate |
| Volume 2, Page 285, IPVID.001 to IPVID .015 | IP Telephony - Video Telephony System | Technical Specifications Stands Deleted – Duplicate |

- **Section 7.11, Physical DC/DR Technical Specification, W: Network Behaviour Analysis**

| Sr. No. | Original Description | Revised Specification |
|---------|--|-----------------------|
| W.8 | Perform full reconstruction of assets transferred, accessed and transmitted | Deleted |
| W.15 | The solution must have feature for root cause analysis and while PCAP import the System is performing LIVE packet capture of the network | Deleted |
| W.17 | Provide a visual representation of relationships between entities (IP, email ids, etc) | Deleted |
| W.18 | Highlight potentially malicious or suspicious content | Deleted |
| W.20 | Should be able to remediate Endpoints from the same console | Deleted |
| W.22 | 3rd Party Threat Feed integration – add live-feeds, like Snort, quickly and easily. Reputation Services provide added value and threat intelligence | Deleted |
| W.23 | Should be able to remediate Endpoints from the same console | Deleted |
| W.26 | Should capture all packets from network in real time and be able to classify, extract and analytics, reconstructs network activity and forensics over IPv4 and, IPv6 | Deleted |

Annexure H: Revision in Technical Evaluation Criteria

Content in the RFP Volume I, 3.7. Technical Bid Criteria & Evaluation, Section A, point A.5, Page 44

| Sr No | Criteria Category | Evaluation Criteria Details | Max Marks Allotted | Supporting Documents |
|-------|--|---|--------------------------------|---|
| A.5 | BIDDERS COMPETENCE EXECUTING – CITY OPERATIVE CENTER(COC)/COMMON COMAND & CONTROL CENTER (CCC) | Bidder (any consortium member) should have experience in executing a city wide project that entails operationalization of COC/CCC | 10 | Copies of Work Order, work completion certificate, and other relevant documents |
| | | Number of Projects | % of Max Marks Allotted | |
| | | > or =4 | 100 % | |
| | | =3 | 75 % | |
| | | =2 | 50 % | |

Revised Clause in the RFP Volume I, 3.7. Technical Bid Criteria & Evaluation, Section A, point A.5, Page 44

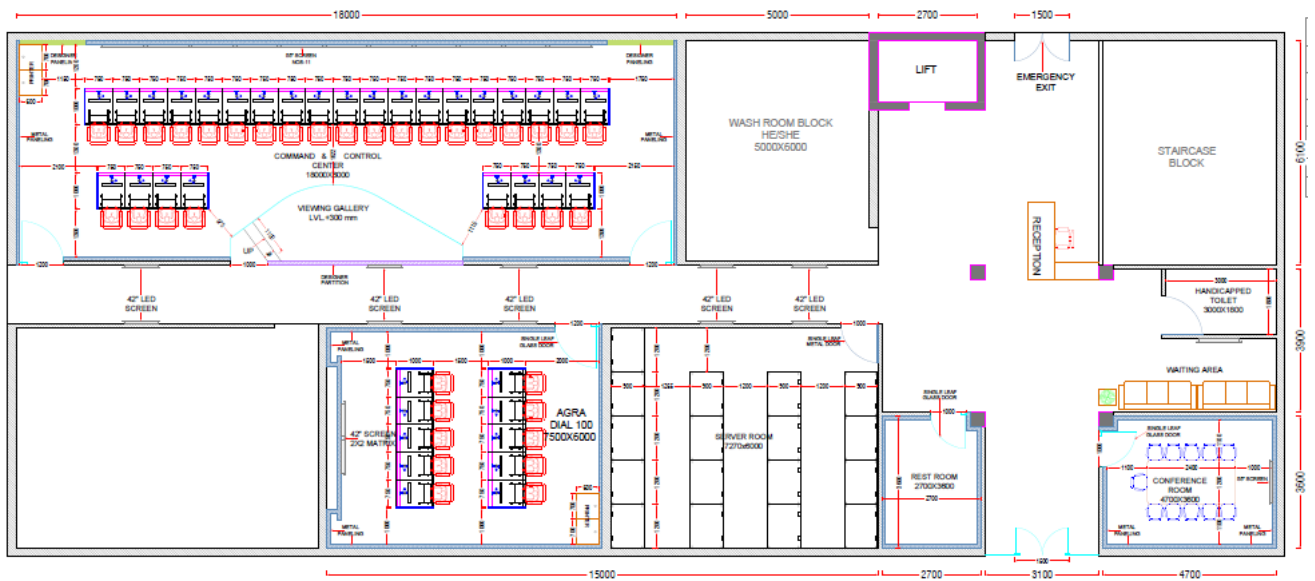
| Sr No | Criteria Category | Evaluation Criteria Details | Max Marks Allotted | Supporting Documents |
|-------|---|---|--------------------------------|---|
| A.5.1 | BIDDERS COMPETENCE EXECUTING – COMMAND OPERATIVE CENTER(COC)/COMMON COMAND & CONTROL CENTER (CCC) | Bidder (any consortium member) should have experience in executing a project that entails operationalization of COC/CCC | 7 | Copies of Work Order, work completion certificate/partially completed certificate, and other relevant documents |
| | | Number of Projects | % of Max Marks Allotted | |
| | | If any one of the ICCC project is completed/partially completed by the lead/sole bidder only not through OEM criteria, in one of the cities from Smart Cities Mission | Additional 20% | |
| | | > or =4 | 80 % | |
| | | =3 | 70 % | |
| | | =2 | 50 % | |

| Sr No | Criteria Category | Evaluation Criteria Details | Max Marks Allotted | Supporting Documents |
|-------|------------------------|---|--------------------|---|
| A.5.2 | Bidder's Certification | Lead bidder/Sole Bidder should possess any of the below certifications a) ISO 20000:2011 b) ISO 27001:2005 or above | 3 | Valid ISO certificates in the name of the lead bidder/sole bidder |
| | | If Lead bidder has both the two certifications | 100% | |
| | | If Lead bidder has any one certifications | 50% | |

Annexure I: List of Location for Variable Message System

| S. No. | List of Junctions | Latitude | Longitude |
|--------|---|----------|-----------|
| 1 | VMS (MG RD Southbound) - 1 | 27.20772 | 78.00392 |
| 2 | VMS (MG RD Southbound) - 2 | 27.19798 | 78.00257 |
| 3 | VMS (MG RD Northbound) - 3 | 27.19479 | 78.00131 |
| 4 | VMS (MG RD Southbound) - 4 | 27.18276 | 78.00116 |
| 5 | VMS (MG RD NorthBound) - 5 | 27.16276 | 78.00867 |
| 6 | VMS (Fatehbd RD Eastbound) - 6 | 27.16088 | 78.03101 |
| 7 | VMS (Fatehbd RD Westbound) - 7 | 27.16068 | 78.04155 |
| 8 | VMS (Fatehbd RD Westbound) - 8 | 27.15726 | 78.06449 |
| 9 | VMS (Fort RD Westbound) - 9 | 27.17517 | 78.026 |
| 10 | VMS (NH-2 RD Westbound) - 10 | 27.21249 | 78.07157 |
| 11 | VMS (NH-2 RD Eastbound) - 11 | 27.2164 | 77.9488 |
| 12 | VMS (Puranimandi Xing RD Northbound) - 12 | 27.17391 | 78.02526 |

Annexure I.2: Indicative Dimension of ICCC



Annexure J: Revised Bill of Material

All other terms and conditions of the original RFP document shall remain unchanged.

| S.No. | Line Item | Unit of Measurement | Indicative Quantity |
|---|---|---------------------|---|
| A. Integrated Command and Control Center | | | |
| 1 | Control Room Interior | No. | 1 |
| 2 | Control Room Desk / Furniture | No. | 1 |
| 3 | Integrated Command and Control Center Solutions | Set | 1 |
| B. Data Center and Disaster Recovery Core Infrastructure | | | |
| HCI Solutions, Physical Server and Software Licenses | | | |
| 1 | HCI appliance | Set | 2 |
| 2 | Centralized Management tool for all HCI nodes | Set | 2 |
| 3 | Physical Servers for Non HCI environment | Set | 2 |
| 4 | Hypervisor License | Set | 2 |
| 5 | Operating systems for the compute environment | Lot | Actual Quantity Arrived as per Solution |
| 6 | Virtualization Software License | Lot | Actual Quantity Arrived as per Solution |
| 7 | Database Server Licenses | Lot | Actual Quantity Arrived as per Solution |
| 8 | PIM License | Lot | Actual Quantity Arrived as per Solution |
| Switches and Routers | | | |
| 1 | Spine Switch | No. | 2 |
| 2 | Leaf Switch (OFC and/or Copper) | No. | 6 |
| 3 | Fabric Controller | No. | 1 |
| 5 | PoE L2 Access Switch for DC | No. | 4 |
| 6 | Internet Router | No. | 2 |
| 7 | Intranet / WAN Router | No. | 2 |
| 8 | Server Load Balancer | No. | 2 |
| 9 | Link Load Balancer + Global Load Balancer | No. | 2 |
| Storage Requirement | | | |
| 1 | SAN Storage | No. | Actual Quantity Arrived as per Solution |
| 2 | SAN Switch | No. | Actual Quantity Arrived as per Solution |
| 3 | Secondary Storage (Tape/Disk/NAS or Equivalent) | No. | Actual Quantity Arrived as per Solution |
| 4 | Backup Software | No. | 1 |
| Security Solutions | | | |
| 1 | Next-generation Firewall for Internet | No. | 2 |
| 2 | Next-generation Firewall for Intranet | No. | 2 |
| 3 | Web and Email Security Appliance | No. | 2 |
| 4 | Gateway level anti-virus and anti-spam security solution | No. | Actual Quantity Arrived as per Solution |
| 5 | Server Anti-Virus License | No. | Actual Quantity Arrived as per Solution |
| 6 | Enterprise Management System including NMS for DC and DR environment: License | No. | Actual Quantity Arrived as per Solution |
| 7 | DDoS | No. | 2 |

| | | | |
|---|---|---------|---|
| 8 | WAF | No. | 2 |
| 9 | SIEM | No. | Actual Quantity Arrived as per Solution |
| 10 | Network Behavior Analysis | No. | Actual Quantity Arrived as per Solution |
| 11 | Anti – APT | No. | 2 |
| 12 | DLP | No. | Actual Quantity Arrived as per Solution |
| Passive Components and other IT Infrastructure | | | |
| 1 | Video Wall Cubes | No. | 28 |
| 2 | Video Wall Controller with wall management software | No. | 2 |
| 3 | Video Conferencing Unit | No. | 2 |
| 4 | Workstations (Desktop) | No. | 40 |
| 5 | Laptops (Latest Configuration) | No. | 10 |
| 6 | Multifunction Laser Printer | No. | 4 |
| 7 | Complete Electrical, Power and Networking Cost (Passive Components) (Pl. specify the details like Junction Box, Patch Panel, LIU, OFC, Cat6 Cable, Power Cable, Patch Cords, GI, HDPE Pipes, Installation & Labor Charges, etc. | lumpsum | Actual Quantity Arrived as per Solution |
| 8 | Public Address System | No. | 4 |
| 9 | Fire Alarm and Extinguisher System | Set | 1 |
| 10 | Biometric access control system along with Cage | Set. | 2 |
| 11 | CCTV cameras for internal surveillance | No. | 6 |
| 12 | Rodent Repellent system | Set | 1 |
| 13 | UPS (sizing as per proposed solution) | No. | 2 |
| 14 | Diesel Generator | No. | 2 |
| 15 | Building Management system | Set | 1 |
| 16 | Bidder to estimate redundant power requirement at DC and DR | lumpsum | As per requirement |
| 17 | DC - Core IT Infra System Integration | Lumpsum | As per requirement |
| 18 | Support L1, L2 Manpower for DC Operations 5 Years | lumpsum | As per requirement |
| C. Helpdesk | | | |
| 1 | IP Phones with Head Sets and Three Screen Tele-Presence | No. | 40 |
| 2 | IVRS Server | No. | 1 |
| 3 | CTI Software – Automatic Call Distribution Server with Voice Logger | No. | 1 |
| 4 | IP PBX | No. | 1 |
| D. Intelligent and Adaptive Traffic Signal | | | |
| 1 | ATCS Controller with cabinet and other accessories | No. | 63 (Per Junction) |
| 2 | Traffic Signal Aspects -Red | No. | 450 |
| 3 | Traffic Signal Aspects - Amber | No. | 450 |
| 4 | Traffic Signal Aspects -Green Arrow | No. | 1016 |
| 5 | Vehicle Countdown Timer | No. | 212 |
| 6 | Pedestrian Countdown Timer with Red/Green Man | No. | 424 |
| 7 | Detectors | No. | 212 |
| 8 | ATCS Software (including but not limited to integration, APIs, etc.) | No. | 1 |
| 9 | Power Cables | Lumpsum | Per Junction |

| | | | |
|---|---|----------|--|
| 10 | Electrical Supplies (including but not limited to UPS, RCBO, Earthing, etc.) | Lumpsum | Per Junction |
| 11 | Cantilever Poles along with foundation | No. | Per Junction |
| 12 | Straight Pole along with foundation | No. | Per Junction |
| 13 | Other civil works (including but not limited to trench, filling, ducts, junction box, chambers, mounting structures, etc) | Lumpsum | Per Junction |
| 14 | Other services (including but not limited to surveys, installation, commissioning, testing, traffic engineering, etc.) | Lumpsum | Per Junction |
| E. City CCTV Surveillance System | | | |
| 1 | Fixed Camera | No. | 790 |
| 2 | PTZ Camera | No. | 326 |
| 3 | Video Management Software with License | Lot | 2 |
| 4 | Video Analytics Software with License | Lot | 2 |
| 5 | Network Switch Ruggedized (Industrial Aggregation Switch) | No. | As per requirement |
| 6 | Junction box | No. | As per requirement |
| 7 | Rack Mounted LIU | No. | As per requirement |
| 8 | UPS – 2 KVA | No. | As per requirement |
| 9 | Power Cable | Meter | As per requirement |
| 10 | Passive Components and Site Preparation | Lump sum | As per requirement |
| 11 | Up gradation for UP 100 Police Vehicle (Surveillance Cameras with Display Mechanism) | No. | 50 |
| 12 | Body Worn Camera | No. | 50 |
| 13 | Face Recognition System | No. | 150 Channels |
| 14 | Peripherals for Police at each Police Thana (Mini PCs, Video Display Walls and Printers) | No. | Total 86 Police Stations: Mini PCs – 268 (8*16,70*2) Video Display - 1 Each Printers - 1 Each |
| 15 | Attribute Based Search | No. | 250 Channels |
| F. Intelligent Traffic Management System | | | |
| 1 | Fixed Box Cameras | Nos | 56 |
| 2 | PTZ Camera | Nos | 77 |
| 3 | ANPR Camera | Nos | 213 |
| 4 | RLVD Camera | Nos | 110 |
| 5 | Public Address System – IP based PA with speakers | No. | 43 |
| 6 | ANPR Software with License | Lot | 1 |
| 7 | RLVD Software with License | Lot | 1 |
| 8 | PA Software with License | Lot | 1 |
| 9 | Emergency Panic Button License | Lot | 43 |
| 10 | Emergency Panic Button Software License | Lot | 1 |
| 11 | Gantry Pole Set up | No. | As per requirement |
| 12 | Passive Components and site preparation | Lump Sum | As per requirement |
| 13 | eChallan Handheld Device | Nos | 100 |
| 14 | Illegal Parking/No Helmet/Wrong Way Detection Camera/Software License | Nos | MSI to check functional compliance through Hardware / Software at given locations in Annexure |
| 15 | Variable Message Signboards | Nos. | 12 |
| G. Solid Waste Management system | | | |
| 1 | Number of Households | Nos. | 3,50,000 |

| | | | |
|--|--|---------|--------------------|
| 2 | Number of Wards | Nos. | 100 |
| 3 | Number of Community Bins | Nos. | 444 |
| 4 | Vehicle Tracking System (VTS) GPS device | Nos | 150 |
| 5 | RFID/QR Based Reader Devices or Smart Phones | Nos | 1968 |
| 6 | RFID/QR Based Tags for Commercial Establishments (500), Community Bins, Collection Containers | Nos | 1044 |
| 7 | RFID/QR Based Tags for Households | Nos. | 3,50,000 |
| 8 | RFID/QR Based Tags for Garbage Collection Vehicles | Nos. | 150 |
| 9 | Bin Volume Sensors | Nos | Per Bin |
| 10 | CCTV Cameras for Surveillance | Nos | 150 |
| 11 | GPS and Biometric based handheld device with Attendance management system application | Nos | As per requirement |
| 12 | GPRS/GSM Connectivity - SIM Card & Service Plan | Nos | As per requirement |
| 13 | GPRS/GSM based device to send real time Weigh bridge data from treatment site to ICC | Nos | 1 |
| H. Smart Public Transport System (Number of Buses = 170nos) | | | |
| 1 | IP Dome Cameras | Nos. | 340 |
| 2 | Vehicle Tracking System (VTS) GPS device for Buses (170) and Ambulances (75) | Nos. | 245 |
| 3 | Public Address System – IP based PA with speakers with Software | Nos. | 170 |
| 4 | Emergency Panic Button with Software | Nos. | 170 |
| 5 | Fleet Management and Analytic Solution for Decision Support | Nos. | 2 |
| I. Environment Sensors | | | |
| 1 | Central Environment System | Nos | 1 |
| 2 | Environmental Sensors | Nos | 39 |
| J. GIS | | | |
| 1 | Base Map preparation | Set | 1 |
| 2 | GIS and Image Processing Hardware and Software | Set | As per solution |
| 3 | Development of Enterprise GIS Portal and 12 Department Applications | Nos. | 12 |
| 4 | Integration of GIS with existing and proposed system | Set | 15 |
| K. Network Bandwidth | | | |
| 1 | Cost estimate for Bandwidth requirement as per the requirement (implementation and Maintenance period) | Lumpsum | 1 |
| L. Any Current or Future Integrations | | | |
| 1 | Multiple Integrations and with all type of sensors (shall be planned in future too) | Lumpsum | 1 |