

**REQUEST FOR PROPOSAL**

**FOR**

**UP-GRADATION OF POLICE CONTROL ROOM,**

**POLICE HEADQUARTER PANCHKULA**

**HARYANA POLICE**

**Volume II**



RFP no. Hartron/Proj/PCR-PCK/2011-12 \_\_\_\_\_

Dated: \_\_\_\_\_

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Limited**

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## **1. GENERAL TECHNICAL REQUIREMENT**

- i. The technical specifications specified in this volume are the minimum suggestive specifications.
- ii. Bids not meeting these minimum suggestive technical specifications are liable to be rejected. In case the equipment quoted exceeds/differ with the RFP technical specifications, the same should be clearly mentioned along with justification.
- iii. The bidder can indicate missing components if any, that may be considered necessary in his bid to implement and operate the facility to meet the required objectives of the project as has been laid down in this document.
- iv. The bidder will offer equipment that will best accommodate and meet the present and future requirements of Haryana Police.
- v. The equipment supplied should tolerate Indian power and weather conditions. Further, all equipment shall comply with the applicable power and safety standards.
- vi. Bidder to specify required line voltage, voltage tolerance, frequency tolerance, max. Current consumption, max power consumption, maximum operating temperature, maximum operating humidity for each of the equipment used in control room.
- vii. One set of service and operation/instruction manual is required to be supplied with each of the equipment.
- viii. Successful Bidder shall maintain necessary inventory of spares for smooth uninterrupted networking operations of these sites.
- ix. viii) The Successful Bidder shall provide patches, updates and upgrades of all the supplied software free of cost for five years. \
- x. All the equipments should be new and of the prevailing/current standard production of the manufacturer at the time of the proposal and shall not bid/

supply any equipment that is likely to be declared end of sale with one year of the date of the supply of the said equipment.

- xi. The successful bidder is required to supply the latest version of software, providing all the features enumerated in this specification, at the time of award of contract. Equipment must be compatible with other Network vendor equipment.

## **2. POLICE CONTROL ROOM (PCR)**

The Police control room of Haryana police located in Panchkula required to be upgraded to make it a command and control centre for Haryana Police.

This command and control centre will control all security solutions and communication system of Haryana police installed in different cities. All the existing control rooms of the Haryana police across the state will connect to this command & control centre server application at Police control room Panchkula through Haryana State wide area Network & Soft switch. It is for the information of all the bidders that all the offices of Haryana Police located all across the state has been connected on Haryana State Wide Area Network.

The command and control center once fully functional should be able to provide the following:-

- Multi-stream, multi-format I/O
- Multi-user operation
- Commanding
- Real-time graphical visualization
- Integrated simulation environment
- Archival, retrieval, and playback
- XML configuration database
- System customization tools
- Modular data processing
- Network/Internet data distribution
- Built-in Graphical tools: Quick-Look, Data Analysis, & Event Messaging

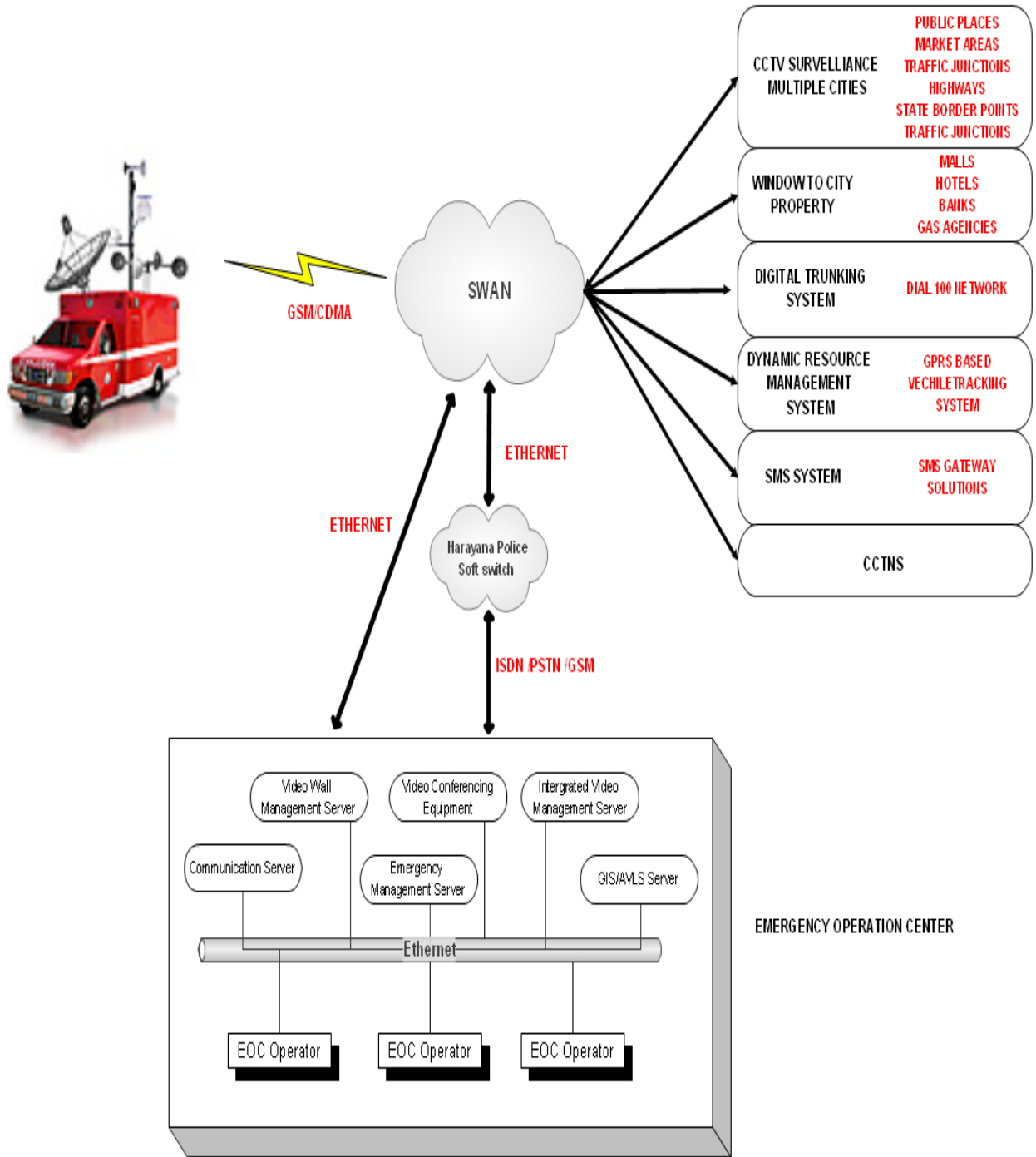
**Typical Applications:**

- Control center situation awareness
- Remote/Mobile control & monitor
- Mobile command & control
- Telemetry & tracking
- Launch & fire control
- Automated test
- Process control
- Training Simulation
- Traffic control
- Robot cell control

The Command & control centre will have following major components /services at Police control room Panchkula so as to achieve the objectives as laid in the RFP

- ❖ Police control room Server with Redundant mode
- ❖ IP based Police control room Clients cum Operators
- ❖ Video & Content Analytics Management Server
- ❖ Communication Server with Redundant
- ❖ Call Taking & Dispatch Server
- ❖ GIS / AVLS Server
- ❖ Video Wall Display Server
- ❖ Mobile Command & Control Vehicles
- ❖ Database Server
- ❖ Integration Services
- ❖ Video Conferencing Equipment

### 3. ARCHITECTURE



#### 4. MINIMUM SUGGESTIVE TECHNICAL SPECIFICATION

##### 4.1 EMERGENCY MANAGEMENT APPLICATION SERVER

###### 4.1.1 Call Taking –Dispatch Application

- i. This software should act as an application which facilitates the call taking and dispatch operation for the control room operators, which act as client to this server. This application should be specifically designed for control room operators in order to facilitate the emergency management. The dispatch and emergencies management application should be designed to facilitate the management of emergency procedures for the control room operators. The application should automate all the aspects of the event, like:
  - Call taking and classification
  - Units Dispatching
  - Events Monitoring
  - Reporting and Statistical Analysis
- ii. The server application should allow all the operators to work in a coordinated manner where in they can share the communication interfaces and can see each other's status. The Operations Commander or Supervisor should have a centralized console where the status of all the operators should be shown and allow generating their activity report.
- iii. When a call is received in the control room and answered by an operator, the data collecting window should pop-up automatically and the caller's personal details are filled in. Some data, such as the phone number, could already be registered in the system's database. This is the case if the number had already called the control room before and there for the number was kept in the system data base. In those cases, a lot of time is saved, thanks to which emergency dispatching becomes faster and more efficient. When the information is not available, the operator should fill in the form with the data provided by the caller. After filling in the forms, the operator, depending on the information given by the caller, sorts the event according to its type, opening the corresponding window to start the event. The application should include help tools for event management (action procedures).

###### 4.1.2 Functional Requirements for the Emergency Management Application

Serial No.	Functional Requirements
1.	The application shall permit the call from any source and through any available medium of communication PSTN Call, Cellular Phone Call (GSM, CDMA, WLL), police radio, SMS, e-mail, alarm inputs or VoIP calls.

2.	The system shall allow a seamless integration of Calls to 100 (Police), 101 (Fire), 1073 (Traffic Helpline), etc and also allow prioritization and selective landing at specialized operator consoles.
3.	Dispatcher shall be able to call back the caller at the click of a mouse and It shall also be possible to send an SMS to the number.
4.	Call classification: Calls once received at the system shall allow the call taker to classify the call under 3 headings i.e. INCIDENT, FALSE CALL, QUERY. Subsequent to the 3 primary headings, the INCIDENT type shall be classified based on the Haryana Police procedure. The dispatcher shall see the incident types decision tree to pick the correct one.
5.	Each call shall intimate the call taker on the work monitor and reflect on its GIS window simultaneously.
6.	Duplicate Call: The system shall alert the call taker for any duplicate call and the call shall get associated with the primary event. The system shall suggest the possibility of a duplicate call based on the location, time, classification, etc. Duplicate calls shall be cross referenced for easy retrieve ability.
7.	Caller Information: The system shall have a database that will keep the basic critical information of the callers, therefore once a call is received from someone that had previously called, the information from the database will be displayed
8.	Caller Location: The application shall allow the PSTN calls to be located on the map according to the information available from the telephone company. The system shall support ALI for cellular calls as and when it becomes available. For calls where no location information is generated by the system, it shall be possible for the call taker to manually pinpoint or create a general location for the caller. For PSTN calls it shall be capable of handling conflicts in address information provided by the service provider and the caller. The caller's information, if the call taker chooses, shall be updated into the system database.
9.	Caller History: The system should maintain history of the caller. It shall be possible to create a reject list where crank callers are added after informing them through SMS.
10.	The system shall be responsible for the dispatch of police resources to the scene of incident upon receipt of calls or requests for assistance from the Telephone System.
11.	The Incident once classified and detailed by the Call taker, shall be passed by the system to one or more dispatchers. The Dispatchers are usually one or two per radio channel and their area of control shall be divided geographically. The system shall be able to choose the appropriate dispatcher depending on the location of the incident.
12.	The application shall suggest units and resources for dispatch based on a predefined algorithm. The conditions could include jurisdiction, proximity, specialization, available equipment and, rotational allocation of duties.
13.	Dispatch application should be fully integrated with the Communication system. It should give direct access to communications from the event form. It should give direct access to any communication system integrated in the Control Room (Radio, Telephone). It should automatically transfer the ANI and ALI when available to the event form. If a call is received from a number associated to an emergency, the event form related to that emergency shall be automatically opened.
14.	Dispatch and GIS integration: <ul style="list-style-type: none"> <li>When the event is created in the dispatch application including location, the</li> </ul>

	<p>system should automatically create an icon for the event on the map. This icon will be associated to the type of event and priority in the system. A label including the type of incident and reference number shall also be displayed. All the incident details should be available by clicking on that icon.</p> <ul style="list-style-type: none"> <li>Information about the units (mobile and fixed) shall be available from the map.</li> <li>From the dispatch application it should be possible to center the map and to identify the units closest to an event or the unit's availability.</li> <li>Reports and incident maps. It shall be possible to produce graphic reports including crime maps and specific reports.</li> </ul>
15.	The server should allow maximum of 60 operators clients to be connected at any time.
16.	The Application should be customizable to include the standard operating procedure of Haryana Police.
17.	The application should be compatible with the Oracle based DB software. The same needs to be proposed by the vendor.

#### 4.1.3 Emergency Management Server–Deliverables

Serial No.	Item Description	Quantity
1	Windows OS based 19" rack-mountable Server	2
2	Server Software License as per above functional requirements.	2

#### 4.1.4 Emergency Management Server Hardware - Technical Specifications

Function	Description
Processor	Dual Intel Xeon E5620, 4C, 2.40GHz, 12M Cache, 5.86GT/s, 80W TDP, Turbo, HT, DDR3-1066MHz or higher
Memory	12GB DDR3 Memory

Graphics	VGA graphics adapter
Raid Connectivity	Yes
Disk Capacity	146GB, SAS 3Gbps, 3.5-in, 15K RPM
CD/DVD Drives	24X CDRW/DVD Combo Drive
Power Supply	Dual Redundant Hot-Swap Power Supply
Primary Network Card	1Gb Ethernet
Secondary Network Card	1Gb Ethernet
Factory Installed Operating System	Windows XP / 7
Rack Mounting	19" Rack Chassis
Monitor/Peripherals	Integrated 1U keyboard, mouse and monitor presented as a slide out tray

#### 4.2 CONTROL ROOM OPERATOR WORKSTATION

- i. The control room operator will act as a client to the various servers (Communications, Emergency Application, Video Mgmt & GIS) in the control room. Each operator will have 3 display monitors and 1 touch panel based communication monitor apart from the audio devices and microphone.
- ii. The Operator workstation will also have client interface to the CCTNS server to verify or validate the identity of the criminals or the crimes conducted. The incoming calls will be directed by the communication server to the operator and the Emergency Management Application window should open up with the details of the call and the address as well ,in case, the ANL/ALI information is available from the service provider. The operator should be able to view the location of the calling person on the GIS map screen once the address is filled up into the system either manually or from the system. Lastly, he should be able to dispatch the call to the appropriate police personal over the VHF/UHF wireless radio. Each of the operators can act as a call-taker or a dispatcher.

- iii. Similarly, the operator should be able to view the video feed from the cameras mounted across the state by clicking on the corresponding camera icon mapped on to the GIS screen.

#### 4.2.1 CONTROL ROOM OPERATOR WORKSTATION – DELIVERABLES

Serial No.	Item Description	Quantity
1	Windows OS based PC Workstation	15
2	22" TFT Display Monitors (3 Per Operator)	45
3	Touch Panel Display – 14"	15
4	PTT foot switch	15
5	Wireless Headset with mic	15
6	USB based PTT Microphone	15
7	Audio Speakers	15
8	Call-Taking & Dispatch Client Software	15
9	GIS Client Software	15
10	Integrated Security Management Client Software	15
11	Integrated Communication Software Client	15

#### 4.2.2 CONTROL ROOM OPERATOR WORKSTATION - TECHNICAL SPECIFICATIONS

Serial No.	Technical Specifications
1	Communications user interface, which is user-friendly and very easy. The communications interface shall work both independently and integrated with the

	<p>applications installed in the workstation.</p> <p>This application shall be:</p> <ul style="list-style-type: none"> <li>• Supportive of either Mouse or Touch-screen use</li> <li>• Ergonomic</li> <li>• Intuitive</li> <li>• Fast: "Touch and Talk" both for radio and telephone communications.</li> <li>• Reliable with high availability</li> <li>• Universal symbols/icons (avoiding texts). Resources icons shall be resizable, in order to increase the number of resources displayed at the same time without scrolling. Fixed or activity based resource icon display will be configured dynamically by the dispatcher.</li> <li>• Communications integrations done by drag and drop system.</li> </ul>
<b>2</b>	Each post shall include a last call recorder. This system will record the last conversations in which the dispatcher was involved. The access to these conversations shall be easy, fast and shall be integrated in the application, avoiding having to access remote recording systems.
<b>3</b>	Reporting and Statistics: The system shall provide a detailed report of the quality of service delivered in the control room. It shall be possible to analyze all the communications established from the control room; amount of received calls, missed calls, etc... including radio and telephone communications; workload for each dispatcher; and other parameters that help continuous improvement of the control room.
<b>4</b>	The console system shall be equipped with the necessary interface to PABX/PSTN so as allow dispatcher to make and receive telephone calls.
<b>5</b>	A graphical icon shall show when the phone is ringing and shall be accompanied by an audible ring through the speakers. The telephone line may be answered, put on hold, and later released
<b>6</b>	Outbound telephone calls may be made from the dispatch position through use of the dialer. The dialer shall feature an on screen keypad which allows the dispatcher to dial out on the telephone selected. Dialing shall also be done through the keypad portion of the keyboard. Speed dialing and alias dialing shall also be supported. It shall be possible to make these calls directly from the map and from the dispatch application

7	The application shall help in the call reception, event dispatching and coordination of the resources required to solve the emergency. This tool shall take into account the entire lifecycle of the emergencies, from the first call reception until the final reporting.
8	Each user shall log in the system with a user login and password. This login will grant access to specific system features depending on the user profile and level. There will be at least 3 levels (operator, control room master and administrator). It shall be possible to have local and remote dispatchers.
9	<p>The system shall include at least the following features:</p> <ul style="list-style-type: none"> <li>• Call reception and call classification</li> <li>• Warning if the call reports an event that was previously reported</li> <li>• Automatic action protocols, integrated with communication systems</li> <li>• Unit dispatching, aiding the dispatcher in the unit selection, showing available units. These features will assist the dispatcher through the entire process in order to facilitate a quick resolution of the event.</li> <li>• Incident follow up: the dispatcher shall be able to see on the screen the progress of the units assigned to resolve the incident.</li> <li>• Event ending, closing the form</li> <li>• Statistics and Reports</li> <li>• Resources Management: personnel planning, availability, workload, etc...</li> <li>• False Calls Handling</li> </ul>
10	<p>The system shall allow easy access for the system administrator to change configuration parameters such as:</p> <ul style="list-style-type: none"> <li>• Multi-level incident types: the number of levels shall be configurable</li> <li>• Multi-agency: Each dispatcher, provided a user login, shall belong to one or several agencies and will see only his/her own agency events.</li> <li>• Action Protocols</li> <li>• Action Plans</li> <li>• New resources available</li> <li>• New units, patrols</li> <li>• New user profiles.</li> </ul>

<p><b>11</b></p>	<p>The Operator workstations shall be based on a standard PC platform, including:</p> <ul style="list-style-type: none"> <li>• Standard PC based on Intel Processor (Core TM 2 Duo E5200 ) 2 MB CACHE L2</li> <li>• Windows based Operating System</li> <li>• HD 120 GB SATA II 7200 rpm</li> <li>• 3 GB RAM DDR II</li> <li>• 4 VGA interfaces with min. resolution 1280x1024 32 bits</li> <li>• DVD Writer</li> <li>• At least 4 USB ports</li> <li>• SoundBlaster</li> <li>• Fast Ethernet Network Board</li> <li>• TFT (22" 1280x1024)</li> <li>• 1 touch screen (14") for communication management</li> <li>• USB Headset</li> <li>• USB Microphone with PTT</li> <li>• Footswitch</li> </ul>
<p><b>12</b></p>	<p>The application shall provide on-line help facilities on the application and at the system level. The help facility shall be displayed in a separate window intelligently positioned such that it shall not in any way overlay the active window on which the Workstation Operator is working (if applicable).</p>
<p><b>13</b></p>	<p>Data Integrity:</p> <ul style="list-style-type: none"> <li>• Data must be consistent and accurate under all circumstances.</li> <li>• Subject to the security rules, data must be accessible by concurrent processes in update or enquiry mode under all circumstances.</li> <li>• The application shall provide facilities to perform periodic data integrity checks on major system tables.</li> <li>• The client application shall be of modular design and shall be expandable on modular basis.</li> <li>• The application shall enable installation or patching of system software and application software with minimum disruption to production work.</li> <li>• The application shall provide a simple and efficient graphical interface for operator workstation.</li> <li>• The application shall provide facilities to allow the production of hard copy printout of any window displayed on screen through the Network Printer.</li> <li>• The application shall provide clear and concise error messages or warning messages for invalid input.</li> </ul>

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**Operator Application User Interfaces**

The application solution will provide:

- A Maintenance Dashboard supporting the following capabilities:
  - Users:
    - Add New User.
    - Enable User.
    - Disable User.
    - Delete User.
    - Reset Password.
    - Reset User Lock Out.
  - Delete Reports.
  - Site Folders and Locations:
    - Add New Site.
    - Add New Map
    - Site Details.
    - Delete Site.
  - Site Contacts:
    - Add Site Contact.
- An Electronic Daily Occurrence Book:
  - Add task with fields for title and details (Time, date and User ID auto populated from system information)
- A Communications Manager providing management and visibility of all Short Message Service (SMS) text messages out and in bound.
- An Emergency management dashboard providing quick access to system resources such as:
  - Incident report explorer.
  - Crisis communicator.
  - SMS message interface.
  - Flat camera list showing all online resources.
- Visual management dashboard showing operator and system performance metrics, including:
  - Total incident resolved in the last 7 days.
  - Breakdown of incidents "today", split as:
    - Total incident "today".
    - Total incidents resolved "today".
    - Total incidents current "today".
- Report generator facilitating the creation of reports for incidents and daily occurrences book entries.
- Report explorer which will contain all reports generated by the system, a search feature will allow users to locate desired information quickly.
- Device Status Manager
- The proposed solution shall be capable of displaying operator user interfaces in the operator's native language.
- The proposed system must have a powerful and friendly administration interface that includes wizards and summaries to help system administration for power users.
- The administration interface must be configurable but must include the ability to add users, manage groups and schedules, roles and permissions, device

	status and summary, mappings and associations for cameras and alarms, site information and contacts.
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### 4.3 INTEGRATED CCTV / VIDEO MANAGEMENT SERVER

#### 4.3.1 OVERVIEW

S. No.	Functional Requirement Overview
1	The proposed solution shall provide an integrated secure, scalable and easily accessible software-based solution for the management of the complete physical security infrastructure – for example: CCTV images, access control systems, intruder systems, fire systems, Building Management Systems, video wall processors, Global Information Systems.
2	The proposed solution shall provide functionality of a powerful and efficient management interface for all the security systems across all sites.
3	The software vendor must be entirely independent from any Physical Security hardware manufacturer, in order to ensure continued cross-platform interoperability.
4	The proposed software shall provide authorized users access to the various systems managed by the solution.
5	The proposed software shall be capable of providing bi-directional control of managed systems, and management information.
6	The proposed application shall allow for complete visibility of the security estate and will include appropriate visualization, such as specific and customized Graphical User Interfaces (GUIs) and Large Screen Video Display technologies.
7	It shall facilitate the integration of third party video analytic systems to be integrated with CCTV systems.
8	The proposed solution shall provide a real-time display of system status and data at all operator workstations
9	The proposed application shall monitor status and record activity transactions of all secured areas and alarm input/output points; visually and audibly annunciate alarms upon change of status, for assessment and response at all operator workstations

10	The proposed solution shall monitor and record alarm, and operator activity to an online history/archive database for audit and reporting
11	The proposed solution must include a sophisticated integrated workflow management engine. During deployment business policies relating to the requested workflows shall be programmed into the system using a graphical designer. When an alarm is received for processing the GUI will dynamically reconfigure to show specific guidance, which will lead the operator through a series of steps to the point where the alarm can be successfully resolved. The workflow process guides the operator through the policy using "Yes", "No", 'Back', 'Next', 'Escalate', 'Park', and 'Resolve' buttons. Every click and interaction is logged centrally to a database for a full audit trail, which relates back to the business policy.
12	The proposed solution must feature a Driver Development Kit (DDK) which 3rd parties can use to develop integrations to the platform without the need for the integrated technology provider to release their API or source code. The DDK must be comprehensively documented and allow 3rd parties to create drivers to the product without requiring the assistance of the solution provider, or access to the solution source code.

#### 4.3.2 ARCHITECTURE

S. No.	System Architecture
1	The proposed solution shall be a high performance client-server application built on the latest Microsoft .NET technology platform.
2	The proposed solution shall be flexible and scalable in architecture, permitting expansion of both capacity and functionality, to be implemented progressively as needed, through software licensing, customizations, live configuration, or software upgrades
3	The proposed server software shall be able to run on both multiple and single processor computers. Where a multiple processor system is used the server software shall be able to make optimal use of that configuration.
4	Multiple proposed application servers must be capable of managing significant loads by spreading the load across the server farm.
5	A failure of any one of the proposed application servers shall NOT cause the entire system to cease operation.
6	The proposed solution shall be centrally managed, which means that regardless of the quantity or location of devices the configuration, management, and monitoring of the entire security infrastructure can be performed from a central server and optionally from

	workstations networked to the central server.
7	Device drivers must be architecturally separate from the core server application to ensure that instabilities in the third party SDK do not affect the core server application. This is also extended to the client application and should be achieved by hosting video content in a fault tolerant output control component designed to isolate and manage any video exceptions.
8	The proposed system must not be limited to the type of system that it can integrate, now or in future, this should be achieved by representing all assets under its control as objects. These objects shall be represented in a generic manner exposing a set of properties, events and functions to the proposed application. Objects shall be provided for all real-world touch points and for proposed, specific functionality (triggers, storage and playback, badge management, positioning information etc.).
9	The proposed application must be able to display and manage all of the integrated systems from one location that is accessible from any of the client applications. This should be achieved from a system configuration screen giving access to all the objects under the control of the proposed system.
10	The proposed System Configuration screen shall expose all properties available on objects under the control of the system allowing an administrator to have one consolidated platform for configuring all aspects of the security integration process and management of devices.
11	The proposed application shall be able to support all devices associated with this project including: NVR/DVR, Video Management Systems (VMS), GIS, Call-Taking & Dispatching Application, CCTNS, Dial-100, Video Walls & Communication system.
12	The proposed system shall also be able to grow with the future expansion plans with support for new devices being added when and where required. New device support shall be added in the form of a device driver and shall not require any major system update leading to system down time.

#### 4.3.3 STANDARD COMPLIANCE

The proposed application shall integrate with/support all of the following standards:

S. No.	Standard Compliance	
A	IT infrastructure for the solution	
A.1	Server platforms:	Microsoft Windows Server 2003 / 2008 R2
A.2	Client platforms:	Microsoft Windows XP 32 bit
A.3	Browser technology:	Microsoft Internet Explorer 6 / 7

A.4	Application Database:	Microsoft SQL Server 2005 / 2008 R2
A.5	Database Access:	Any ODBC compliant database
A.6	Email servers:	SMTP
B	Analog and Digital CCTV cameras	
	Camera Resolutions	
B.1	QCIF resolution: 176x120 NTSC (176x144 PAL)	
B.2	CIF resolution: 352x240 NTSC (352x288 PAL)	
B.3	2CIF resolution: 720x240 NTSC (720x288 PAL)	
B.4	4CIF resolution: 704x480 NTSC (704x576 PAL)	
B.5	D1 resolution: 720x480 NTSC (720x576 PAL)	
B.6	HD resolutions	
C	Network Video Recorders (NVRs)	
D	Digital Video Recorders (DVRs)	
E	Video Display Systems	
F	Geographical Information Systems (GIS)	
G	Global Positioning Systems (GPS)	
H	Communications systems	
H.1	PSTN/ISDN	
H.2	Cellular telecommunications (e.g. GSM/GPRS/SMS)	
H.3	Telephony / PABX systems	
H.4	Broadcast communications	
H.5	Public Broadcast systems	

#### 4.3.4 VIDEO HANDLING REQUIREMENTS

<b>S. No.</b>	<b>Video control Features</b>
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1	Keeping in mind that the operators may not have device specific knowledge and training, the proposed solution must express camera control in a uniform manner across all types of video system. All video devices should be selectable by clicking and drag and drop. Pan Tilt and Zoom (PTZ) control must be achievable by live 'click in image' and also by serially connected keyboard. All telemetry types must be supported in a transparent implementation to the operator, allowing the same external keyboard or 'click in image' to control any of the supported telemetry protocols.
2	Clicking on a video tile should bring up a tool menu that allows all available functions to be presented to a correctly authorized operator. The proposed solution must allow playback to be invoked from this live menu, additionally snapshot, preset and auxiliary controls should be displayed if available from the Video Management System (VMS).
3	The playback must be able to be invoked per video tile from the live monitoring screen. The proposed system must not require playback invocation to be achieved through a dedicated 'playback application' or 'playback screen' but on the operators live alarm workspace.
4	The proposed system must represent playback generically across all video devices, and give the ability, where supported by the Video Management System (VMS), to show a timeline, pause, fast forward or rewind and calendar date/time navigation.
5	The proposed systems user interface shall be able to playback or show live, or any combination of the two, multiple video cameras across multiple VMS systems and manufacturers simultaneously to the operator, with no practicable limit imposed on the number concurrently controlled.
6	The proposed solution must be capable of simultaneously displaying multiple video streams on a single display, including but not limited to 4, 6, 9 and 16 tile layouts. These live or recorded video streams can be from disparate analogue and digital sources, including those from different manufacturers, all displayed concurrently.
7	All playback, PTZ and live view functionality must integrate with the proposed system's permissions engine. It must be possible for the proposed system to restrict any of the individual actions based on user login and role. These permissions must be definable in one location and must be applied to all types of VMS manufacturer integrated into the solution.

#### 4.3.5 RECORDING CAPABILITIES

S. No	Recording
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1	The proposed solution shall feature interoperability with major DVR and NVR manufacturer recording equipment and applications.
2	The proposed application shall expose a high level of functionality from NVRs
3	The proposed application shall expose a high level of functionality from DVRs
4	The high level of functionality exposed by the proposed system from NVRs and DVRs shall includes playback, image retrieval, alarm events, health status and menus.
5	The system should be able to integrate and manage recordings from virtually any NVR or DVR, providing a Software Development Kit (SDK) is made available from the respective manufacturer.

#### 4.3.6 CAMERA CONTROL

<b>S. No.</b>	<b>Camera Control</b>
1	The proposed Solution shall allow full PTZ control (including camera functions such as presets and tours) for the video cameras.
2	It shall also be possible to drive telemetry using a mouse by clicking within the CCTV image displayed in the GUI.
3	Option to drive telemetry using a workstation connected CCTV keyboard shall be made available.

#### 4.3.7 ALARM MANAGEMENT AND VISUALIZATION, PROCESS AND REPORTING

<b>S. No.</b>	<b>Alarm Management and Visualization, Process and Reporting</b>
1	To allow centralized management the proposed application must have a central alarm stack that receives, categorizes and prioritizes all alarms in the system. The schema must be flexible and allow for custom views and columns to be created or removed, the views must be attributed to a user role providing specific and tiered access.

2	The alarm stack in the proposed solution must include, but not be limited to, the following columns: Unique ID, date and time, location, status, physical state, logical state, priority, current handling user, current handling client, Service Level Agreement (SLA) level and device panel text.
3	It shall be possible to create an unlimited number of different Views and Counts for an alarm stack.
4	The Alarm Stack must be able to provide complex formatting and filtering, allowing priorities to be assigned a color and sort order. Additionally it must be possible to perform roll up grouping and filters to allow an operator to efficiently manage large volumes of alarm data.

#### 4.3.8 PROCESS MANAGEMENT AND AUTOMATION

S. No.	Process Management and Automation
1	The proposed application must have a logical workflow engine capable of enacting real life policies accurately and in their full detail, without artificially limiting their effectiveness through a system limitation.
2	<p>Policies shall be capable of being triggered to include user-generated, logical, time and event triggering. Actions carried shall include:</p> <ul style="list-style-type: none"> <li>• Two-way messaging – pager, email, and SMS (Short Messaging Service) – responses to messages shall also form part of the policy.</li> <li>• User input – user defined forms or button activation.</li> <li>• Escalation – based upon time and event.</li> <li>• Parking – provide whilst an operator deals with a more urgent event.</li> <li>• Forwarding – based upon capacity or incident type or date/time.</li> <li>• Dynamic GUI re-configure (workstation and/or video wall) based on event, incident type or alarm.</li> <li>• Dynamic device control – automated (based on policy) and/or user controlled.</li> </ul>
3	The Workflow engine must provide the capability for the operator to interact with the proposed system in order to step through the event. Interaction will include buttons for yes, no, back, next, accept, park and escalate alarm, plus text boxes catering for free text entry. The process guidance must be context specific and also shall offer the ability to dynamically access other logically disparate devices as part of managing the incident, such as Telephony / PABX systems or Cellular SMS modems.
4	The security policy of the proposed system shall be able to take into account the result of any actions, for example, user input, type of message

	response, time out on events.
5	<p>The workflow engine must control all aspects of the alarm logic and process. The graphical engine and process guidance must provide true, rich, user interface and guidance and not a simple tick list of tasks.</p> <ul style="list-style-type: none"> <li>• The proposed solution, as part of the workflow process, must be able to undertake tasks automatically, or as part of an operator guided process.</li> </ul>
6	<p>The proposed solution shall allow the workflow and process engine to be fully extensible and not impose any practical limitations on the logic that can be achieved:</p> <ul style="list-style-type: none"> <li>• The workflow engine must be fully parameterised and capable of creating complex variable types</li> <li>• The workflow must have a scriptable engine that allows full control over all variables including: <ul style="list-style-type: none"> <li>a.) Logical assignments and operations</li> <li>b.) Mathematical functions and operations</li> <li>c.) Property assignment</li> <li>d.) Method invocation</li> <li>e.) Evaluation and conditional operations</li> <li>f.) Case statements</li> </ul> </li> <li>• The script environment must provide auto-completion (like Microsoft intelli-sense) and shall be user friendly</li> <li>• The workflow engine and script must incorporate error checking and be able to give meaningful error messages (for example type mismatch and unassigned variable)</li> <li>• The workflow must be able to create 'modules and template' classes that can be linked to create and provide libraries for re-use</li> <li>• The workflow plans must be inheritable allowing dynamic invocation</li> </ul>

#### 4.3.9 SECURITY PROCESS AUTOMATION

The proposed solution shall be implemented to automate and/or provide operator guidance for the following security processes

S. No.	Security Process Automation
1	Fire alarm handling
2	Network Appliance alarm handling
3	CCTV alarm handling

#### 4.3.10 AUDIT TRIALS

S.No.	Audit Trials
1	The proposed system must provide a comprehensive mechanism for managing audit and compliance.
2	The proposed system must allow for audit points to be inserted at any point in an alarm handling process. Each interaction the operator undertakes must be recordable. The proposed system must allow the alarm handling process to be matched to the implemented security operating procedure.

#### 4.3.11 USER PERMISSIONS

S. No.	User Permissions
1	The proposed solution shall provide a graphical user interface to allow system administrators to quickly assign a user to a user group and a user group to a security resource.
2	A super user (group administrator) should be able to manage the user permissions for the groups of users they administrate.
3	Security resources of the proposed system may also be grouped (e.g. a building or a single site) such that users have permission only to interact with resources in single or multiple groups.
4	<p>The user permissions required are:</p> <p style="text-align: center;">For CCTV monitoring</p> <ul style="list-style-type: none"> <li>• View live CCTV stream</li> <li>• View playback CCTV stream</li> <li>• PTZ control</li> <li>• PTZ preset recall</li> <li>• PTZ preset setting</li> <li>• View existence of camera</li> <li>• View existence of location folder</li> <li>• View contents of location folder</li> <li>• Run reports</li> </ul>

	<p style="text-align: center;">For Alarm management</p> <ul style="list-style-type: none"> <li>• View Fire alarms</li> <li>• View Incident Alarm</li> <li>• Manage Incident Alarm</li> <li>• Manage fire alarms</li> <li>• Run reports</li> </ul>
5	<p>The permissions the proposed solution shall allow an administrator to configure are:</p> <ul style="list-style-type: none"> <li>• Create a new user</li> <li>• Delete a user</li> <li>• Disable a user</li> <li>• Create a new user authentication group</li> <li>• Delete a user authentication group</li> <li>• Disable an authentication group</li> <li>• Add a user to the authentication group</li> <li>• Remove a user from authentication group</li> <li>• View users in authentication groups</li> <li>• View authentication groups</li> <li>• Add a camera to an authentication group</li> <li>• Remove a camera from an authentication group</li> <li>• View cameras in the authentication group</li> <li>• Apply permissions to a camera for an authentication group</li> <li>• View current permissions for an authentication group</li> <li>• Reset permissions for an authentication group</li> </ul>
6	User permissions shall be configurable and effective in real time with at most 60 seconds between change and impact taking effect.
7	It shall also be possible to schedule changes for planned, known events. For example, to associate a time and date to the start/end of a set of user permissions. The time period may be hours, days, weeks or months.
8	Ad-hoc and scheduled changes shall also optionally require manual approval by another administrator prior to taking effect.

#### 4.3.12 MANAGEMENT REPORTING AND LOGGING

S.No.	Management Reporting and Logging
1	The proposed solution shall feature an integrated Report and Charting Designer to enable flexible management reporting.
2	The proposed solution shall provide a dashboard visualization tool providing information on the current status of the system.

3	All reports and charts shall be generated as a Microsoft Office Professional application document (MS Word, MS Excel) or an Adobe Acrobat compatible portable document format (PDF).
4	Reports and charts shall be integral to the solution; no external application shall be required to create the reports.
5	Reports shall be rendered either as 2D, 3D or flat tables. It shall be possible to present information in line or pie chart format.
6	Reports shall be created dynamically as part of a security policy or manually by a user. It shall be possible for reports to be displayed as part of the GUI – either on the workstation or the video wall or both.
7	Reports, charts and logging information shall include but not be limited to: a.) Event information showing event type, location, time, date and action taken. b.) User activities including sign on/off times, activities carried out during sign on, event response times c.) Device information including device audits and device reliability

#### 4.3.13 BIDIRECTIONAL COMMUNICATIONS

<b>S. No.</b>	<b>Bidirectional Communications</b>
1	The proposed solution shall be capable of receiving and transmitting information and events to and from the devices associated to this project. This shall allow the full remote control of any devices and/or systems managed by the proposed system.
2	The proposed system shall also be capable of communicating with third party applications and databases.
3	The proposed solution shall provide a trigger mechanism allowing the proposed application to react to events occurring on any object under the control of the proposed system. A Scenario object shall be provided to allow the creation of more complex alarm conditions involving the logical comparison of multiple Trigger objects.
4	The system shall allow bi-directional control of sub systems. In addition it will also cause this to be escalated to a supervisor under certain conditions.
5	The system shall also be able to generate calls to intercom, Fire PVA, VoIP Telephony and cellular systems

#### 4.3.14 HOSTING ENVIRONMENT

<b>S. No.</b>	<b>Physical Servers</b>
1	The server hardware shall be located within the Central Control Center's climate controlled equipment room. The systems integrator shall be responsible for providing suitable server equipment.
2	The end-user shall provide in house virus software and shall be responsible for ensuring the virus software is kept up to date.
3	The system integrator/IT department shall be responsible for applying Windows Updates to the servers.
4	Due to the mission critical nature of the solution it is recommended that the servers are connected to an Uninterruptible Power Supply (UPS). The UPS shall be provided by the end-user. The system integrator shall be responsible for providing information regarding hardware loadings and any other relevant information to enable a suitable UPS to be provided.
5	All equipment shall be compatible with 19" equipment rack enclosures.

<b>S. No.</b>	<b>Client</b>
1	Each user wishing to access the proposed system shall require a workstation, using the Microsoft Windows platform, running the proposed client software.
2	The client workstation shall be locked down to only run the proposed solution to prevent users loading other programs such as Internet Explorer and Microsoft Media Player, other than in circumstances required by the end-user.
3	The end-user shall provide in house virus software and shall be responsible for ensuring the virus software is kept up to date.
4	The system integrator/IT department shall be responsible for applying Windows Updates to the workstations on a regular basis.
5	All equipment shall be compatible with 19" equipment rack enclosures and installed in the communications room adjacent to the command and control room. The integrator shall supply all cable extenders to facilitate this including: USB, Audio, DVI video and RS232.

#### **4.3.15 FUTURE CAPABILITIES**

Supplier must demonstrate that the proposed solution is being continually developed and enhanced according to market requirements, industry and technological advances.

**4.3.16 COMMON PRODUCT REQUIREMENTS**

S. No.	Network Infrastructure
1	<p>The proposed solution shall utilise the capability of the available network infrastructure, taking full advantage of networks that provide:</p> <ul style="list-style-type: none"> <li>a.) Support for 1000 multicast video streams</li> <li>b.) UDP and TCP protocol support.</li> <li>c.) Fully managed, redundant layer three network capable of IGMP V1, 2 and 3 covering core and edge switching.</li> <li>d.) Virtual LAN capability.</li> <li>e.) Quality of Service marking support (Differentiated Service Code Points).</li> <li>f.) Gigabit backbone.</li> <li>g.) The onsite LAN network shall not be based on point to point SDH (synchronous digital hierarchy), MPLS (multi-protocol layered switching) or ATM (asynchronous transfer mode). It must be based on IP end to end.</li> </ul>
2	<p>The network shall only be considered fit for purpose after full commissioning and testing has been successfully carried out.</p>
3	<p>Once installed the network integrator shall work with the end-user and the systems integrator to prove the networks capability. The following tests shall be carried out.</p> <ul style="list-style-type: none"> <li>a.) Multicast video encode.</li> <li>b.) Multicast video decode.</li> <li>c.) Tests to be carried out between all nodes</li> <li>d.) Load testing to meet the maximum requirement for concurrent video streams.</li> </ul>

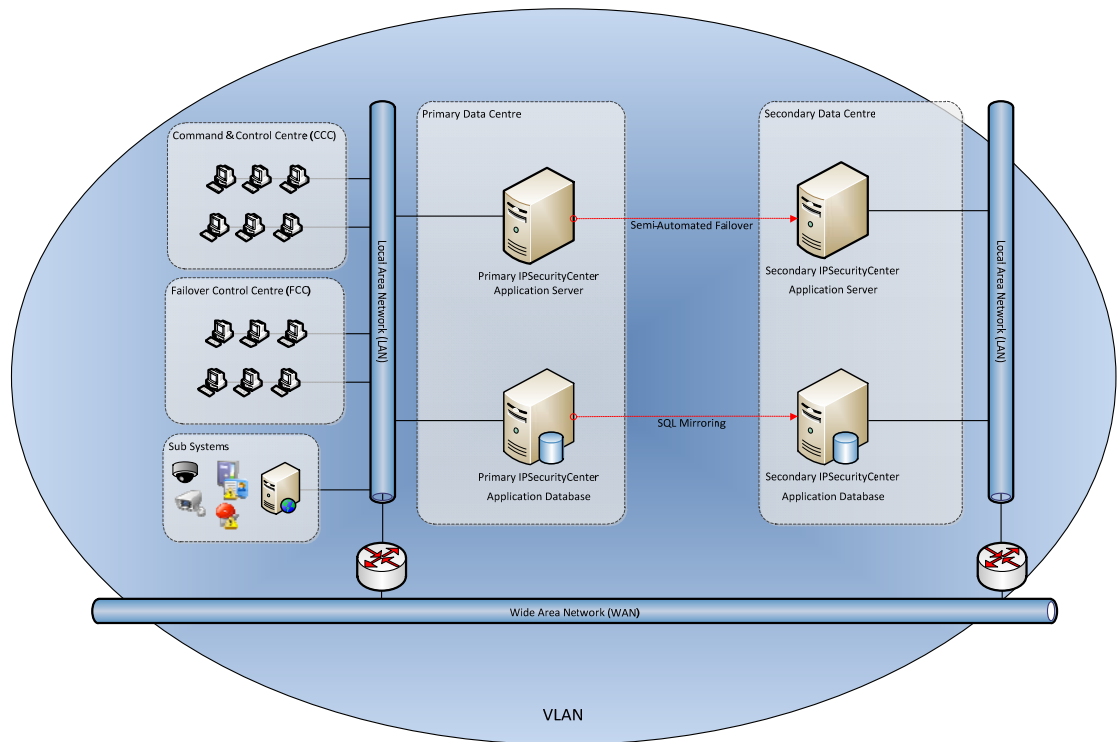
**4.3.17 SOFTWARE LICENSING REQUIREMENTS**

Software shall be licensed and permit growth over time.

S. No.	Software Licensing Requirements
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1	<p>Software shall be licensed based on the following:</p> <ul style="list-style-type: none"> <li>• Number of devices</li> <li>• Number of thick clients</li> <li>• Number of thin clients</li> <li>• Number of servers</li> <li>• Total number of connected physical security devices</li> <li>• Functionality, by module</li> </ul>
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**4.3.18 REDUNDANCY MODEL**



**4.3.19 HARDWARE SPECIFICATIONS**

Function	Description
Processor 1	Intel Xeon E5620, 4C, 2.40GHz, 12M Cache, 5.86GT/s, 80W TDP, Turbo, HT, DDR3-1066MHz or higher
Processor 2	Intel Xeon E5620, 4C, 2.40GHz, 12M Cache, 5.86GT/s, 80W TDP, Turbo, HT, DDR3-1066MHz or higher

Memory: -	12GB DDR3 Memory
Graphics: -	VGA graphics adapter
Raid Connectivity: -	Yes (RAID 5 for Data Disks)
1st Hard Drive (System Disk – RAID 1): -	146GB, SAS 3Gbps, 3.5-in, 15K RPM
2nd Hard Drive (Mirror of Drive 1): -	146GB, SAS 3Gbps, 3.5-in, 15K RPM
3rd Hard Drive (Data Disk – RAID 5): -	146GB, SAS 3Gbps, 3.5-in, 15K RPM
4th Hard Drive (Data Disk – RAID 5): -	146GB, SAS 3Gbps, 3.5-in, 15K RPM
5th Hard Drive (Data Disk – RAID 5): -	146GB, SAS 3Gbps, 3.5-in, 15K RPM
6th Hard Drive (Data Disk – Optional): -	146GB, SAS 3Gbps, 3.5-in, 15K RPM
CD/DVD Drives: -	24X CDRW/DVD Combo Drive
Power Supply: -	Dual Redundant Hot-Swap Power Supply
Primary Network Card: -	1Gb Ethernet
Secondary Network Card: -	1Gb Ethernet
Factory Installed Operating System: -	See below – point 1
Microsoft SQL Server: -	See below – point 6 & 7

Rack Mounting: -	Rack Chassis
Monitor/Peripherals: -	Integrated 1U keyboard, mouse and monitor presented as a slide out tray

#### 4.4 GIS SERVER

- i. The function of the GIS is to provide the digital mapping interface for the display and query. It also serves as one of the display engines for vehicle's location and status information collected from the AVLS servers located across the states.
- ii. GIS shall be fully integrated with other components of the control room to form the seamless operational solution. It shall be built upon a client/server architecture allowing all the operators to have a GIS based display on their monitors. The GIS server also needs to integrate with the other GIS servers installed across the city allowing the locations of the local resources to be shown on the GIS screen of the Operators in control room.
- iii. The GIS Mapping client software shall have an easy and intuitive interface which allows users to access the mapping functionality with little or no training. Resource icons should be updated in real-time to reflect real situation of the locations of appliances and officers, thus ensuring that the operator is making decisions based on the latest information and not on outdated information. Similarly, Dispatchers shall be able to easily locate resources on the map, analyze their surroundings, and visualize relevant contextual and spatial information. The operator should be able to work with more than one map scale at any given time, synchronizing the position across multiple views. Color coding of resources is required, to reflect type and status, thereby allowing the dispatcher to identify the positions of resources easily. The map database shall hold multiple views and scales of maps, both raster and vector, with overlay support for boundaries, station grounds, mobilization areas, areas, sectors, and zones.

##### 4.4.1 FUNCTIONAL & TECHNICAL REQUIREMENT

1. The system shall allow its operators to execute the typical functions of a GIS Cartographic System (Zoom In/Out/Pan/Total, identification and search of elements in the Cartography, Cartographic data presentation in a parametric way by the user, etc.) as well as the possibility to visualize automatically the vehicle and people positioning (when they carrying a GPS).

2. The GIS shall also consist of data updating equipment, including file server equipment for the supply of up-to-date digital map and geographic data.
3. The GIS shall exchange data in OGIS conformed data format with the necessary color and symbol. The exchange of data shall not cause any loss of information, geometrical characteristics and accuracy.
4. The GIS shall consist of an efficient Relational Database Management System (RDBMS) or equivalent to manage both graphical and textual data in a database management system.
5. The GIS shall provide efficient user interface to support different modes of operations in GIS subsystems (e.g. GUI and batch).
6. The GIS shall allow the input, storage, process, display and output of English characters amongst different system software components such as operating system, database software and application software.
7. The GIS shall consist of tools to handle fast retrieval of geographic data at operator consoles to provide good performance.
8. The GIS shall use software distribution mechanism for updating the software and geographic data to operator workstations.
9. The GIS shall maintain the metadata of the GIS database and the catalogues information of the system.
10. The GIS shall support the definition of different colors for the display of different objects and layers.
11. The GIS shall support overlapping geographic features and entities (including point line polygon and groups of polygon), multiple geographic objects on a single network graphic, and the effective handling of different versions of the map.
12. The GIS shall allow easy turn-on / turn-off of individual layers and pre-determined group of layers with pre-defined icons on-screen.
13. The GIS shall allow the refresh of display if a new location is selected on-screen with zoom adjustment.
14. The GIS software shall:
  - a. Support all the data input, storage, editing, display, query and spatial analysis requirement to meet the functional specifications of the GIS and other sub- systems;

- b. Be able to handle spatial data by individual graphic element, individual geographic feature and groups of geographic features;
  - c. Be able to link the attribute data in different sub-system with each geographic features;
  - d. Be able to handle different versions of geographic data;
  - e. Be able to handle overlapping geographic features, overlapping or intersecting graphical elements
  - f. Visualize maps areas according to a specific position, zone or vehicle.
  - g. Offer the possibility to move inside the map (displacements up/down/right/left), to make zoom, center and drag the map, etc
  - h. Get a list of streets, areas or places.
  - i. Allow customization of the graphic interface
  - j. Permit establishment and reception of calls through the objects represented in the map. If the call comes from a registered object, the map will be automatically centered on this object.
  - k. Permit control on the surveillance cameras
  - l. Area alarms, geo-alarms: when specific vehicles entering/leaving a marked sector in the map.
  - m. Provide the distance between two points in the map, which could be vehicles, vehicle and place, two places, etc.
  - n. Calculate area surfaces
  - o. Search places according to its names or form of address.
  - p. Satellite/aerial photos may be included
15. GIS and Communications integration. GIS system must meet at least the following requirements:
- a. From the map, just a mouse-click over each patrol or mobile unit shall let to establish a communication with it, it does not matter the corresponding communication interface (VHF radio, analogue or digital trunking radio, mobile telephony, etc.). The same will be possible with any other resource included in the Cartography (hospitals, schools, police stations, hotels, other services, etc.) to communicate directly from its icon in the map

- b. When receiving a call, it will be able to configure the system to center automatically the call location on the map

16. GIS Database:

- a. The RDBMS software shall be open, such as Oracle, Sybase, SQL Server, PostGIS, etc. which is able to support Open Database Connectivity (ODBC) for exchanging data with other systems using standard SQL utilities.
- b. The RDBMS shall be able to store and access spatial data object directly into the database as a generic database object type or through interface or middleware in the storage and access of spatial object, depending on the design of the RDBMS.

#### 4.4.2 GIS SERVER – DELIVERABLES

Serial No.	Item Description	Quantity
1	Windows OS based 19" rack-mountable Server	2
2	GIS Software as per specs	2
3	GIS Database and Integration	1

#### 4.5 COMMUNICATION SERVER

- i. The communication server in Control room should act as an integrated communication system or soft switch, where in, the various kinds of communication technologies like Wireless Radios (VHF/UHF), GSM, PSTN / ISDN, VoIP, VSAT should converge and allow the call taking and dispatching by the various operators sitting in the control room. It should be able to interface with the local EPABX or IP-PBX and allow the call transfer and conferencing between the Police personals on the field and senior officers in their offices and Control Room. The system should be based on OPEN architecture thereby allowing the integration of Wireless Radios, VoIP & VSAT system from different vendors.
- ii. The communication server should work in a redundant fashion thereby ensuring that the communication system is up even in case of failure of primary server. This communication server should allow all the operators to collaborate with each other over IP and let the supervisor know the status of

each operator. Communication Server should be installed with Automatic Call Distribution and IVR features.

#### 4.5.1 COMMUNICATION SERVER – DELIVERABLES

Serial No.	Item Description	Quantity
1	Windows OS based 19" rack-mountable Server	4
2	GSM Modem Interfaces	20
3	Wireless Radio Interfaces	20
4	E1 Interface to support 20 PSTN Analog lines	1
5	SIP based VoIP Interfaces	10
6	Communication Server Software for Integration	4
7	Interconnection Panel for multiple interfaces	1
8	19" Rack for communication equipment's	1
9	19" rack mounted RS-232/422/485 serial Server	1
10	Satellite TV Antenna	1

#### 4.5.2 COMMUNICATION SERVER - TECHNICAL SPECIFICATIONS

Serial No.	Sub-System	Technical Specifications

1	General	It should be an OPEN system based on standards.
		It should be based on a client-server architecture allowing the various Operators in control room to access the various communication interfaces in the server over IP connectivity.
		The system should be based on Windows based OS.
		The system should standard COTS server based having Hardware boards to interface Wireless Radios, ISDN/E1, VoIP or GSM communication interfaces.
		Fully Scalable and Modular with a possibility to grow in operators (clients) and in communication channels just adding more HW interface boards or servers.
		It should work in fully redundant architecture.
2	Communication Server Software	All communication lines connected to the server should be accessible from any operator position acting as clients i.e. Lines should be shared between operators.
		The system allows allocating specific lines to specific user profiles (i.e. call takers use only phone lines, dispatchers use only radio lines) or to specific users.
		<p><b>Analog, Digital (ISDN/ E1) Features for IP Client based Operators:</b></p> <ul style="list-style-type: none"> <li>- Receive a Call</li> <li>- Make a Call</li> <li>- Stand By</li> <li>- Conferencing</li> <li>- Call Transfer</li> <li>- Call diversion</li> <li>- Address Book</li> <li>- Missed Calls, Dialed numbers and Answered Calls information</li> <li>- Caller ID display when ringing</li> <li>- Present picture of the caller, if included in the address book</li> <li>- Music on hold</li> </ul>

		- Telephone and Radio/GSM/VoIP integration
		<p><b>GSM lines</b></p> <p>Apart from the features mentioned for the Analog/Digital phone lines following features should be there for GSM interface:</p> <ul style="list-style-type: none"> <li>- Receive SMS</li> <li>- Send SMS</li> <li>- Pre-written SMS can be sent</li> <li>- SMS to a group of numbers from the address book can be sent</li> <li>- GSM to any communication interface integration</li> </ul>
		<p><b>Radio (UHF, VHF, HF) Conventional radio</b></p> <ul style="list-style-type: none"> <li>- Call Reception</li> <li>- CD indication</li> <li>- Multiple Channel simultaneous reception</li> <li>- TX over one channel</li> <li>- TX over multiple channels simultaneously</li> <li>- Selective Calls (emission and detection) if available</li> <li>- Radio Scanning</li> <li>- The system should allow the available radio channels to be shared between the dispatchers i.e. One VHF Radio can be shared so that if there is radio activity all dispatchers can listen to it.</li> <li>- Radio is shared between operators, the radio channel is blocked only when one of the operators pushes PTT</li> </ul>
		<p><b>ACD &amp; IVR</b></p> <p>Distribution of calls among the operators based on different policies (round robin, duty load, destination number, resource used). In case all the communication interfaces are busy then the IVR recorded by the user should be played to the caller.</p>
		<p><b>Last Call Recorder</b></p> <ul style="list-style-type: none"> <li>- Last Call Recorder feature should be available directly from the desk of the operators.</li> <li>- Number of stored conversations configurable</li> <li>- The operator should be able to "lock" a conversation to avoid erasing.</li> </ul>
		<p><b>Call Conferencing</b></p> <ul style="list-style-type: none"> <li>- Conferences should be supported between any of the communication channels i.e. Radio, Telephone, GSM, VoIP</li> <li>- Conferences of up to 10 channels should be supported</li> </ul>

		<ul style="list-style-type: none"> <li>- Multiple conferences should be allowed at the same time</li> <li>- Broadcast communication mode should be available that allows the operator to select multiple channels talks with all of them at the same time, they cannot talk to each other</li> </ul>
		All the communication equipment's like Wireless Radios, ISDN or E1 lines will be provided by the Haryana Police and the same needs to be integrated into the Communication Server.
3	<b>Communication Server Hardware</b>	<ul style="list-style-type: none"> <li>• Processor: Intel Core 2 Quad Core (Intel Q660 )</li> <li>• 2 GB of RAM 800 MHz Bus</li> <li>• 2 x 150 GB HD in RAID 1 configuration</li> <li>• 1 high end VGA card</li> <li>• 2 Gigabit Ethernet Interfaces</li> <li>• Industrial rack mount 4 U</li> <li>• DVD ROM</li> <li>• Motherboard with at least 7 PCI slots (long format). Total 10 PCI Slots.</li> <li>• 350 W Redundant Power supply</li> </ul>
4.	<b>Satellite TV Antenna</b>	An industry standard DTH TV Antenna from a well-known supplier.
5.	<b>19" rack mounted RS-232/422/485 serial Server</b>	<ul style="list-style-type: none"> <li>• 16 serial ports supporting RS-232/422/485</li> <li>• Standard 19-inch rack mount size</li> <li>• 10/100M auto-sensing Ethernet</li> <li>• Built-in 15 KV ESD protection for all serial signals</li> <li>• Easy IP address configuration with LCD panel</li> <li>• Choice of configuration methods: Web console, Telnet console, and Windows utility</li> <li>• Versatile socket operation modes, including TCP Server, TCP Client, UDP, and Real COM</li> <li>• SNMP MIB-II for network management</li> </ul>
6.	<b>19" Industrial Rack</b>	<ul style="list-style-type: none"> <li>• Conforms to DIN 41494 or Equivalent EIA/ISO/EN/CEA Standard</li> <li>• Adjustable mounting depth</li> <li>• Universal 25MM Pitch Holes For ETSI Standard Rocks</li> <li>• Powder coated finished with seven tank pretreatment process meeting ASTM standard</li> <li>• Grounding &amp; Bonding Options</li> <li>• Fan module Mount Provision on top Cover</li> <li>• 27U Height</li> </ul>

#### 4.6 MOBILE COMMAND & CONTROL VEHICLE

- i. This Mobile Command & Control Vehicle (MCCV) is meant for quick video surveillance deployment for the VIP Security during public gatherings and

also to provide localized information from the emergency or disaster site to the centralized Police Control Room.

- ii. The MCCV is meant to operate in stationary condition at the site and should have its own power backup. The surveillance area inside the vehicle should have place for 2 operators to work. The vehicle should be sturdy enough to reach at the emergency / disaster site in the minimal possible time. The vehicle should be equipped with battery powered wireless cameras which are quickly deployable in a public rally site for quick setup of the video surveillance infrastructure. These wireless cameras should be able to cover a public rally site of at least 500 Sq meter area.

#### 4.6.1 MCCV –DELIVERABLES

Serial No.	Item Description	Quantity
1	Surveillance Vehicle	1
2	Operator Workstation	2
3	Monitoring stations each with 2 nos. 24" LCD monitor	2
4	Battery Powered Wireless Fixed IP Camera	4
5	Network Video Recorder	1
6	Video Management Software	1
7	Mast mounted vehicle-top Wired IP PTZ Camera	1
8	Vehicle mounted Flood Lights	4
9	17U 19" rugged vehicle-installed rack with shock mounts	1
10	3KVA UPS with 4 hour battery-back-up	1
11	3.0 KVA Petrol Generator	1

12	Communications Station to integrate Wireless Radios	1
13	GPS-GPRS based Vehicle tracking Device	1
14	GPS Based Vehicle mounted Navigation System	1
15	Network Switch	1
16	Vehicle-roof mounted WiFi Antenna	1

#### 4.6.2 MCCV - TECHNICAL SPECIFICATIONS

##### 4.6.2.1 Surveillance Vehicle

<b>Vehicle</b>		
A	Chassis	Wheel Base: minimum 3200mm, 4-tyre model
		Height (Unladen) (inside the Surveillance Section): minimum 1900 mm
		Width (inside the Surveillance Section): minimum 1905 mm
		Fuel Tank Capacity: minimum 60 Lt.
B	Engine	Engine Capacity: 1948 cc
		Emission: Bharat Stage-III
		Engine Torque (Nm/rpm): 190 @ 2000 – 3000
		Engine Power: 90 HP @ 4300 RPM
		Fuel: Diesel

		The engine shall power the AC, even when stationary. It will not be used to power any equipment in the vehicle. The engine should be fitted with an additional alternator to handle the load of the AC, when stationary.
C	Body	The colour of the van should be White.
		Rust and corrosion resistant
		There should be 2 un-partitioned sections - Driver's Section & Surveillance Section.
		The vehicle should have 2 entrances for the surveillance section.
		The driver's cabin should have seating for the driver and two passengers
		The roof of the van should be strong enough to support a Wi-fi antenna pod and a mast mounted PTZ camera.
		The vehicle should be air-conditioned.
<b>Power Subsystem</b>		
A	Generator-set to power the electronic equipment, accessories, and lighting	Petrol Genset: To supply power to the equipments in the Surveillance Section
		Starting System: Recoil
		Rated output (50 Hz): 2800 VA
		Maximum output (50 Hz): 3000 VA
		Rated voltage @ 50 Hz: 230
		Continuous Operating Time: 6.9 hrs. at rated load

		Fuel Tank Capacity: 12.5 Ltr.
B	UPS	UPS: To supply power to the electronic equipment in the Vehicle for up to 4 hours.
		1 phase input – 1 phase output UPS
		LCD panel information
		Rating: 3 KVA
		SNMP Card for Power Management
		Peak Efficiency: > 80%
		Operating Temperature: 0 – 40 °C
C	Vehicle Mounted Lights	The vehicle should be mounted with the flood lights on the four sides giving visibility up to 50 metres.
D	UPS Battery	SMF batteries with deep discharge technology
		Battery type: SMF
		Powers 3 KVA UPS for up to 4 hours
		Fully-sealed construction
		UL/CE certification
		Nominal Voltage: 12V
<b>Interiors</b>		
A	Body	The colour of the interiors should be beige in colour.

		<p>The Surveillance Section should set two surveillance personnel on independent chairs.</p>
		<p>There should be a storage rack for storing and charging the surveillance equipment and accessories. This storage rack should have an independent suspension to handle vibrations and shocks of the vehicle when it is moving.</p>
		<p>There should be a console to hold the monitoring displays, and the console should be capable of holding up to 4 nos. of 24" LCD monitors. There should be an independent suspension set-up for this console. The console should have the necessary power and networking outlets.</p>
		<p>The chairs (one in front of each set of 2 monitors) should be swivelable and fastened to the floor of the section.</p>
		<p>The monitors for the surveillance computers should be mounted in such a manner that it is convenient for viewing by the seated surveillance personnel.</p>
		<p>There should be storage for files and other documents.</p>
		<p>All the electronic equipment should be housed in a 17U 19" rack with the necessary power sockets. The electronic equipment should be housed such that it is safely fastened when the vehicle is moving, and does not fall out. The list of electronic equipment that needs to be stored is provided in the tender document. The rack should be rugged enough with appropriate shock and vibration mounts.</p>
		<p>There should be a provision to fasten all unanchored equipment and furnishing when the vehicle is in motion.</p>
		<p>There should space to stow away the keyboard and mouse, on the console, when not in use.</p>
		<p>The console and the racks should be designed for easy removal and installation in the Surveillance Section.</p>

B	Electrical	The vehicle should have electrical cabling to power computer systems, telecommunications equipment, networking equipment, and surveillance equipment. Concealed ducting needs to be provided in the vehicle body, for electrical and network cabling. The duct panels should be easily accessible by a technician, for maintenance purposes.
		The electrical sub-system in the vehicle should allow power to be drawn from the generators or should allow raw power, based on availability. Accordingly, MCBs, change-over switches, and other equipment should be installed to make this possible. There should be an easily deployable power cable arrangement, using a cable spool, to draw power from an external (outside the vehicle) raw power outlet.
C	Lighting	Each workstation area should be well-lit.
D	Power Generation	The UPS and the generator should be accommodated inside the van
		The generator shall be stowed in the Surveillance Section.
		During a surveillance operation, the generator will be wheeled outside and will run outside the vehicle. The necessary cabling needs to be provided with the generator.
		The generator should directly power the electronic equipment. The generator power should be routed through the UPS, for charging the batteries.
E	General	All the above interior modifications and the color combinations will be done as per the overall guidance of the user.
		There should be sufficient scope for minor variations to be made in these modifications during the phase of development.
F	Mast	Mast should allow PTZ camera to be deployed 1 metre above the height of the roof of the vehicle. It can be roof-mounted, door-mounted, or fitted inside the vehicle.
		The PTZ camera will be permanently fitted to the mast, so it will need to be secured so that it cannot be easily removed.

#### 4.6.2.2 Surveillance Subsystem

<b>Battery Powered Wireless Fixed IP Camera</b>		
A	Sensor	1 Megapixel 1/2.7" CMOS sensor
		720 x 480 Pixels
		Progressive scan
		100 dB dynamic range
		Automatic Low-light mode
B	Optics	F-Stop: 1.4, IR-compatible
		Varifocal Lens: 8 - 40 mm
C	Media Formats	H.264, 320x240, 720x480 (default)
		Audio (G.711)
D	Connections	100 Mbps Ethernet port
E	Wired Options	100 Mbps Ethernet port
F	Wireless	Integrated 802.11n Wireless at 2.4GHz
		QoS WMM 802.11e
G	Wireless Security	Wireless AES Hardware
		Wireless WPA2 Software
		Hidden SSID

H	Protocols	SDP, DHCP, IPv4/6, HTTP, HTTPS, SSL, RTSP, RTP, UDP, RTCP, SCP, FTP
I	Compliance	IP65/NEMA4 Rated
J	Power	External 12V 1.25A
		Ability to switch from AC to battery power when AC power fails; without any interruption in operation
K	Battery for Camera	Li-ion/Li-polymer of capacity to power camera for up to 8 hours
		Fully-sealed construction
L	IR Light Source	IR Range: 50 m
		Integrated
M	ICR	IR-Cut Switch Removable, to ensure even image quality during the day and at night

<b>Pneumatic Mast mounted Wired IP PTZ Camera with Joystick and Software</b>		
A	General	Optical zoom: 35X
		Digital zoom: 12X (all versions)
		Image Stabilization 35X zoom
		RJ-45 Connectors: 1
		Programmable Patterns: 4
		Programmable Areas: 16

		Spherical Privacy Zones: Up to 24
		Video Blanking Sectors: 16
B	Auto Synchronization	Line-Locked: Remote V-phase adjustment
		Internal: Built-in sync generator
		Alarm Inputs: 4 Photo-couple contacts/ 7mA @12 VDC
		Alarm Outputs: 1 Open-collector drivers @12 VDC, 50 mA
C	IP Specifications	Video Standards: ISO/IEC 14496 (MPEG-4)
		Data Rate: 9.6 kBit/s - 4 MBit/s
D	Video Resolution	704 x 576 (4CIF: 30 fps); 704 x 288 (2 CIF: 30 fps); 352 x 576 (Half D1: 25 resp. 30 fields/s)
		352 x 288 (CIF: 25 resp. 30 fps); 176 x 144 (QCIF 25 resp. 30 fps)
E	Connections	Network Connection: 10/100M Base-T
		Network Protocols: ATP, Telnet, ODP, TCP, IP, HTTP, IGMP, ICMP, ARP, SNMP
F	Mechanical	Manual Pan/Tilt Speed: 0.5° ~ 90° per second (0.5° ~ 180° per second for 35X and 36X) (based on zoom position)
		Preset Pan/Tilt Speed: 240° per second, maximum (200° per second, maximum for 35X and 36X)
		Pan Travel: 360° continuous
		Tilt Travel: -3° ~ 90°

		Pan/Tilt Accuracy: $\pm 1^\circ$ ( $\pm 0.3^\circ$ for 35X and 36X)
		Zoom/Focus Accuracy: $\pm 0.5\%$
		Motor: Stepping Motor
G	Environment	Operating Temperature: $-40^\circ\text{F} \sim 122^\circ\text{F}$ ( $-40^\circ\text{C} \sim 50^\circ\text{C}$ )
		Fan & Heater: Continuous fan; auto-start heater
		Humidity: 0~90% RH (Non-condensing)
H	Certifications	FCC, CE
		ISO 9001:2000
I	Joystick	Built-in RS45 generator
		3D joystick variable speed
J	Power	Input Voltage: 12 VDC, 24 VAC, Or 230 VAC
K	IR Light Source	IR Range: 20 m
		Voltage DC : 12V
		Weather proof: IP66

### Network Video Recorder

A	Media Formats	Video Formats, H.264, 360x240, 720x480
		Audio Formats, G.711

B	Audio	Two-way Audio VoIP
C	Input - Camera Support	Up to 16 Total (Wired & Wireless)
D	Output-User Support	Simultaneous Users (16)
		Viewing Live / Recorded Video
		Reduce D1 to CIF for Remote Analog Audio/Video
E	Connections	1 X Ethernet
F	Wireless	802.11g/n Wireless at 5GHz / 2.44GHz
		QoS WMM 802.11e
G	Wireless Security	Wireless AES Hardware
		Wireless WPA2 Software
		Hidden SSID
H	Protocols	SIP, STUN, TURN, ICE, SDP, DHCP, IPv4/6, HTTP, HTTPS, SSL, RTSP, RTP, UDP, RTCP, SCP, FTP
I	Storage & Expansion	Integrated Storage: 500 GB SATA HDD
		External Storage & Back-up: NAS
J	Power	External 12V / 230V

### Video Management Software

A	User Management	Unlimited Users & Roles - Custom defined roles: a.) Individual camera access, b.) View/Delete video Clips, c.) Administration access
		Detailed user activity logging
		Lost password retrieval
B	Video Viewing	Min. 16 Camera Flow View, a.) Live View Displays, Native Resolution, b.) Split Screen, c.) Full Screen
		Live Video Patrols, a.) Select Cameras/Time to Display, b.) Highlight on Motion Detection, c.) Play Audio Alert on Motion
		Digital Pan, Zoom and Tilt
		One Click Record
C	Video Recording & Playback	Record Video and Images, a.) On Demand, b.) On Motion Detection, c.) On Scheduled Day and Time, d.) 24x7x365
D	Scheduling	Schedule Types, a.) Video Recording, b.) Alerts, c.) Backups
E	Back-up & Storage	External Backup, a.) NAS
		Backup, a.) On Demand, b.) On Custom Schedule, C.) By Media Type
		Automatic Purge, a.) By Number of Days, b.) By % of HDD Capacity
F	Supported Devices	Windows PC, IE Web Browser (v7.0+)
G	Media Formats	Video Frame rate: 5 – 30 fps
		H.264, MPEG4, 320x240, 720x480 (default)
		Audio (G.711)

#### 4.6.2.3 Other Equipment

A	Network Switch	16 X 10/100/1000 Mbps Gigabit ports on Cat. 5 cable
		32 Gbps (16-port switch) switching fabric capacity
		Auto MDI/MDIX cross-over for all ports
		Secure store-and-forward switching scheme
		Full/half-duplex for Ethernet/Fast Ethernet speeds
		IEEE 802.3x Flow Control
		Plug-and-play installation
		Patch cables should be provided to connect the surveillance equipment
B	Surveillance Station with speakers, headset, microphone	Intel E7500 processor / G41 chipset / 2 GB DDR III memory / 320 GB HDD / 512 MB ATI Radeon Graphic Card. 2 Qty of Surveillance stations required.
C	Display	24" Wide TFT Monitor. 4 Qtys of Display Monitors.
D	GPS based Navigation Device	This GPS based navigation system should be pre-installed with Haryana city maps. It should have touch based screen and should be able to give the voice based directions to the Driver.
E	GPS Based Tracking Device	This vehicle mounted GPS device should transmit the long-lat of the vehicle to the control room via GSM-GPRS connectivity. A suitable GSM SIM will be provided by the Haryana Police.
F	Wireless Radio	There should be a space for mounting Police's Wireless Base Radios.

	Integration	The Radios will be provided by Haryana Police.
G	WiFi Antenna	Vehicle roof mounted WiFi Antenna needs to be provided for the Wireless Fixed Camera communication with in-vehicle surveillance station based NVR.
H	Mounting Devices	Wireless Fixed IP Camera Mounting Devices
J	Tools	Tool Kit for the Vehicle and for fixing the cameras at surveillance location
K	Medical Kit	Medical Kit for the Vehicle
L	Cable Spool	Ethernet cable spool with 100 metres of Ethernet Cat5e cable – 2 nos.

**4.7 VIDEO WALL FOR EMERGENCY OPERATION CENTER**

- i. A video wall consists of multiple LCD Display monitors sets tiled together contiguously or overlapped in order to form one large screen. Emergency operation centre will equipped with large Video wall for 9(Columns) x 3(Rows) Matrix along-with Video wall processor . Major components of Video wall are listed below and should meet min specifications as given below.
  - a. LCD Display Panels
  - b. Wall Mount Kit
  - c. Calibration Kit
  - d. Video Wall Processor


**Diagram: Video Wall Matrix**

## 4.7.1 LCD DISPLAY

Technical specifications of 46" LCD Display having Ultra-Thin bezel for Large Screen Video Wall with 9(Columns)x3(Rows) Matrix		
S.No.	Specifications Head	Specification Details
1	Make	Vendor to specify, Manufacturer should have ISO 9000 Series or equivalent Certification, as minimum. Supporting documents in this regard are to be submitted along with the offer.
2	Videowall Matrix with IDs	Support 10 x 10 Matrix with 100 IDS
3	Model	Vendor to specify
4	Panel Technology	S-PVA
5	Active Screen Area (W x H) [mm]	1018.4 x 572.5
6	Screen Size(Inch/cm)	46/117
7	Optimum Resolution	1366 x 768
8	Pixel-to-Pixel gap	Less than 7.3 mm
9	Pixel Pitch(mm)	0.746 x 0.746
10	Brightness [cd/m2]	700
11	Contrast Ratio(typ.)	3000:1 or higher
12	Viewing Angle(typ.)	178° Vert., 178° Hor.
13	Response Time(ms)	8 or less
14	Colours [million]	16.77
15	Horizontal (Analog & Digital)	31.5-91.1 (Analog & Digital)
16	Vertical	50.0-85.0
17	Native Resolution	1366 x 768 at 60 Hz
18	Supported Resolutions	1920 x 1080; 1366 x 768; 1440 x 1050; 1680 x 1050; 1600 x 1200; 1280 x 1024; 1280 x 768; 1024 x 768; 832 x 624; 800 x 600; 720 x 400; 640 x 480
19	Video Input	DisplayPort, Analog: 5 x BNC, Component, Composite (via BNC and Cinch); 1 x S-Video; 1 x Dsub 15; Digital: 1 x DVI-D (with HDCP); HDMI 1.3
20	Video Output	Analog: 5 x BNC, Composite (via BNC); HDMI 1.3
21	Audio Input	2 x Cinch, 1 x 3.5 mm Head-jack
22	Audio Input	1 x Cinch
23	Option Slot	Support for Built-in PC, DVI daisy chain board, HD-SDI board, MediaPlayer
24	Power Consumption (typ.) [W]	200 (at 500 cd/m <sup>2</sup> ); 330 (max.)

25	Power Requirements	100 - 120/220 - 240 V; 3.6/1.45 A; internal power supply
26	Dimensions (WxHxD)	Vendor to specify
27	With stand	Vendor to specify
28	Without stand	Vendor to specify
29	Operating Temperature	5-40° C
30	Operating Humidity	20 to 80 %
31	Additional features	Ultra-narrow bezel, SNMP support, Ethernet monitor and control, commercial-grade sealed panel, advanced cooling system for 24/7 operation, expansion slot, programmable lookup tables, Plug and Play (DDC/CI, DDC2B), PIP (remote), POP, 6-axis color adjustment, multilevel programmable zoom, TileMatrix (up to 10x10), TileComp, video ready, scheduler (w/RTC), sharpness/softness, off-timer (countdown), screen saver, vacation switch, 10-bit gamma, AutoBright (signal input), portraitcapable; closed captioning, serial number display
32	Accessories	Power cable, necessary cables reqd. for 9(Columns)x3(Rows) Matrix wall should be supplied with Videowall
33	Warranty	Three year comprehensive onsite warranty, with labour & parts from the date of final commissioning and acceptance by the owner. The bidder should furnish an undertaking from OEM that in case the vendor fails to provide warranty support during stated period, due to any reason whatsoever, OEM would make necessary arrangements to provide the same.

#### 4.7.2 WALL MOUNT

S.No.	Specifications Head	Specification Details
1	Make and Model	Vendor to specify
2	Type of Installation	Standard Installation – Wall Mount Brackets
3	Wall Side Jig	2 Nos. (Top & Bottom)
4	Display Jig	2 Nos. (Top & Bottom)
5	Adjustment Pins	2 Nos.

6	Stopper	2 Nos.
7	Attachment Screws	20 Nos.
8	Maintenance	Front Accessible & Front Maintenance.
9	A Key	1 No.

#### 4.7.3 CALIBRATION KIT

Technical specifications of Calibration Kit		
S.No.	Specifications Head	Specification Details
1	Calibration Software	Vendor to specify make and version of the software.
2	System Requirement	Calibration software to support MS Window operating system. Vendor to specify Memory and Hard disk space requirement.
3	Automatic calibration	Software to support all adjustments to the Display settings automatically using the communications link. All the necessary settings are to be done by the software
4	Internal Test Patterns	Displays are calibrated using internally generated test patterns. Calibration to be performed automatically without having to manually select different test patterns during the calibration process, and without the need to connect a PC to the video input of the displays.
5	10 bit internal Look Up Tables (LUTs)	These tables allow very precise adjustments to be made to the display's Tone Response Curve without reducing the number of displayable colors or introducing color

		banding artifacts.
6	Gamma Correction	As well as adjusting the Intensity (luminance) and white point of the displays, the software will also calibrate the grayscale using the internal LUTs of the displays. A variety of different Tone Response Curves supports from as simple as a small simple gamma value to complex custom curves.
7	Flexible Connections	Display connection using RS232, LAN, or in combinations of both, to the host PC used to perform the calibration.
8	Colorimeter function	Software to support Colorimeter function which allows direct measurements to be taken by the color sensor and the results displayed in a variety of different formats.
9	Scalable	Video wall sizes from a 1x1 single display, to a 10x10 are to be supported.
10	Projects	Software to support 'All display configurations, measurements, and calibration data be saved as a project file for later reference, re-calibration etc.'

#### 4.7.4 VIDEO WALL PROCESSOR

Technical specifications for Video wall processor

Sr.No.	Specifications Head	Specification Details
	<b>Wall Controller</b>	

<b>1</b>	<b>Input Video</b>	S-video, composite video
a	Digital sampling	8 bits per color; 13.5 MHz standard
b	Colors	16.8 million
c	Standards	NTSC 3.58 J and M; NTSC 4.43; PAL B, D, G, H, I, M, N, No
<b>2</b>	<b>Input RGB</b>	
a	Horizontal frequency	31.4 kHz to 100 kHz
B		
C	Resolution range	Upto 1080P
D	Digital sampling	24 bit, 8 bits per color; 205 MHz
E	<b>COLORS</b>	16.78 million
F	<b>INPUT TYPE</b>	RGBHV, RGsB, bi-level or tri-level component video
g	Input level	2.75 to 5.0 Vp-p for RGBHV
<b>3</b>	<b>Input DVI</b>	

a	Resolution range	Upto 1920x1200 @85Hz
b	Maximum data rate	4.95 Gbps
c	Maximum pixel clock	165 MHz
d	Formats	RGB, digital video
e	Standards	DVI 1.0
<b>4</b>	<b>Output</b>	
a	Signal Type	2 scaled VGA-UXGA RGBHV or single link DVI-D
b	Output type	RGBHV
c	Scaled resolution	640x480, 800x600, 848x480, 1024x768, 1150x870, 1280x768, 1280x1024 , 1360x768 1400x1050, 1408x1050 1600x1200 HDTV: 720p 1080p at 50 Hz or at 60 Hz
d		
e	Vertical frequencies	50 Hz, 60 Hz
f	Output level	2.4 Vp-p for RGBHV
g	Output impedance	2.2k ohms
<b>5</b>	<b>Control/Decoder</b>	
	Ethernet ports	Three
	Ethernet data rate	Upto 1000Base-T
	Ethernet protocol	IP, TCP

6	Additional Features	128video/graphic source windows/output card, dedicated high speed bus with a video/graphics transfer speed of upto 10Gbps, computer-video capture IP encoder capability, real-time operating system, fast booting of under 90-seconds, Programmable display scenes, upgradable and cascade able back ground storage, solid state memory for the data storage and operating system, hot swappable power supply and fans.
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## 4.8 VIDEO CONFERENCE SYSTEM

### 4.8.1 Video Conference Device Specifications

- i. The high definition video conferencing device should provide flexible, affordable HD conferencing experience for high quality communication. The HD video conference device should also deliver HD audio and HD content experience to the end users in the same conference and offer following features:
  - The device must provide HD720p30 experience and should be upgradeable to HD1080p30 without changing the codec.
  - Dual monitor display functionality should be available from day one.
  - The endpoint should support line rate of 4Mbps or above for IP/SIP based calls with video error concealment.
  - Endpoint should support simultaneous display of video and content i.e. h239
  - Should support upto 80 presets or more.
  - Support video protocols like H.264, H.261, H.263, H.,263+ +
- ii. **Video Inputs** : Minimum 3 video inputs
  - o Main HD Camera
  - o Content (DVI-I)
  - o S-Video
- iii. **Video Outputs** : Minimum 3 Video outputs
  - o 2x DVI-I HD Video Out
  - o 1xS-video
- iv. **Support video resolutions** : HD720p30, HD720p60, HD1080p30, 4SIF/4CIF @30fps, 4SIF/4CIF@60fps, SIF, CIF, QSIF (176x120), QSIF (176x144)

- v. **Support content resolutions:** Input> HD 1920x1080, WSXGA, SXGA, HD 1280x720, XGA, SVGA, VGA and Output> 720p (1280x720), 1080 (1920x1080), XGA (1024x768), SVGA (800x600), HD content frame rate at 30fps.
  
- vi. **Audio Inputs :** Minimum 3 audio inputs
  - 1 Mic input (quoted system should support up to 2 mics in array)
  - 1x Line Level stereo in (RCA)
  - 1x3.5mm stereo mini (PC Audio)
  - 1xVCR/DVD stereo audio-in (RCA)
  
- vii. **Audio Outputs :** Minimum 2 audio outputs
  - 1x RCA (Main Monitor)
  - 1x RCA (VCR/DVD)
  
- viii. **Camera Specifications**
  - o High Definition Camera
  - o 1920x1080 CMOS Imager
  - o 12x Optical Zoom
  - o 72 degree FOV
  
- ix. **Audio Standards and Protocols**
  - o Stereo Surround
  - o 14kHz bandwidth with G.722.1 Annex C
  - o 7kHz bandwidth with G.722, G.722.1
  - o 3.4kHz bandwidth with G.711, G.728, G.729A
  - o Automatic Gain Control
  - o Automatic Noise Suppression
  - o Instant Adaptation Echo Cancellation
  - o Audio Error Concealment
  
- x. **Other ITU supported standards and protocols**
  - H.221 communications
  - H.224/H.281 far-end camera control
  - H.323 Annex Q far-end camera control
  - H.225, H.245, H.241, H.331
  - H.239 dual stream
  - H.231 in multipoint calls
  - H.243 chair control

H.460 NAT/firewall traversal  
BONDING, Mode 1

**xi. Network**

Interface - 2-port 10/100 auto NIC switch, RJ45 connectors  
H.323 and SIP up to 4Mbps  
QoS (IP Precedence and Diff Serv both)  
Reconfigurable MTU size  
RSVP Support

**xii. Content Sharing**

People and Content both shared in High Definition  
People+Content or standards based H.239 ensures interoperability  
in the industry  
Dual images allows the far end to see the presentation and the  
speaker at the same time  
Flexibility to choose the amount of bandwidth to dedicate to  
Content or People based upon what is being shown  
System will automatically adjust bandwidth allocation when  
sharing content based upon content being shown  
User adjustable setting can be accessed both during a call and  
outside of a call

**xiii. User Interface**

Directory Services  
System Management  
Web based  
SNMP  
DR  
SB and web based Software update

**xiv. Security**

Embedded AES, H.235V3, H.233/H.234  
Secure password authentication  
Secure Web  
Security Mode  
Support for IEEE802.1X  
Support for H.235 Annex D  
Support the WHITELIST feature for secure access

**4.8.2 MCU Specifications**

- i. MCU should be advanced architecture for real time media conferencing platform with higher processing power capabilities. It should be hardware based purpose-built system for advanced video & voice communications. Software based MCU are not acceptable. The MCU should be a non-Windows based operating system. The MCU should interoperate with multiple vendors' endpoints.
- ii. The MCU should be slot based chassis type MCU and should have minimum 2 slots for housing hot swappable media cards.
- iii. The MCU shall be a 3U or more, provided with all the necessary accessories to integrate into a 19 inches or 23 inches rack. The MCU shall have at least three dedicated 10/100/1000 Mbps Ethernet interface for diverse IP communication and there should be a physical separation between management and signaling networks.
- iv. The MCU shall support a dedicated serial/USB connection for maintenance/upgrade. There should be a built-in management tool for hardware monitoring, which can control and monitor the system fans and regulates the AC power supplies.

**v. System Capacity**

- The MCU should support 10 ports HD1080p in Continuous Presence (CP) up to 4Mbps on IP with 30fps and H.264 resolution and AES encryption in the same MCU without cascading.
- MCU should be upgradable to support 30 ports HD1080p in Continuous Presence (CP) in the same MCU without cascading.
- The MCU should support at-least 4 PRIs from the day one and should be upgradeable to support up to 6 or more PRI lines via internal or external module.
- In case of external module, the bidder needs to supply a box currently enabled with 4 PRIs and can be upgraded to host 6 PRIs without changing or replacing the existing box.
- MCU should support PSTN Voice Conferencing for minimum 120 PSTN Voice ports for Audio Conferencing in the same MCU. (Embedded or via external gateway)
- The MCU shall be capable of supporting H323, SIP, and H.235 v3 at the same time. The MCU should also support IPv4 and IPv6.
- The MCU should support H.239 content sharing in ISDN, H.323 modes and BFCP for SIP

- The MCU should support a conference with its full resources ie for a 50 ports MCU; it should be possible to host a single conference containing all 50 participants without cascading.

#### **vi. Video Support**

- H.261, H.263, H.263+, H.264
- HD 720p up to 30 frames per second
- HD 720p up to 60 frames per second
- HD 1080p up to 30 frames per second
- From QCIF to HD 1080p including intermittent resolutions (SIF, CIF, SD, WSD, and HD 720p)
- Up to HD 1080p in continuous presence (CP) transcoding (TX)
- Full Transcoding on all ports
- Video Switching (Voice-Activated Switching)
- 16:9 and 4:3 aspect ratio
- H.239 content sharing resolution: VGA, SVGA, XGA, HD
- Ability to send content to a legacy end point
- Video Feature to sharpen and upscale video
- Source endpoint sends lower resolution and receives higher resolution from MCU
- QCIF >> CIF; CIF >> 4CIF ; 4CIF >> HD 720p
- Symmetric continuous presence on HD 1080p
- MCU should send and receive HD 1080p from Video End Points
- Video/Voice Port Configuration should be configurable.
- System allocate them automatically and
- The user can manually allocate resources as Audio, SD Video and HD types

#### **vii. Audio Support**

- G.711a/u, G.722, G.722.1C, G.722.1, G.723.1, G.729<sup>a</sup>, equivalent or higher
- IVR prompts for auto attendance
- User and managed mute control
- DTMF support

#### **viii. Management Tools**

- Web-based embedded management tool: Web-based access and application-based access
- Administrator, operator, auditor, and chairperson views
- Onboard shelf management monitors and maintains hardware elements
- Complete XML API kit for 3rd party application integration
- Up to 4000 address book entries or higher
- Address book quick search

- Secured management via transport layer security (TLS)
- Conference templates to easily save layouts for recurring meetings
- Internal reservation calendar for scheduling

#### **ix. Conference Features**

- Unified conferencing (PSTN Voice, VoIP, ISDN and IP Video)
- Up to 24 different conference layouts or higher
- 16 sites in Continuous Presence Layout or higher
- Personal layout and Choose site to see
- Auto layout
- Rolling captions support  
Should be able to provide real-time text transcriptions which should appear to all participants
- Lecture and presentation mode
- Far-end camera control (FECC)
- The MCU shall support conferences that permanently exist but use no resources if no participants are in the conference.
- The MCU shall support scheduled conferences and ad hoc conferencing mode at the same time.
- The MCU shall support a predefined and unique PIN for each conference.
- The MCU shall allow users to create conferences on the fly from their endpoints without the need of an operator.
- The MCU shall allow different audio and video settings on individual conference basis ie different conferences with different profiles must exist simultaneously.
- The MCU shall be capable of transcoding on every port without loss of port count
- The MCU shall allow participants to change the layout they see using their endpoint's remote control. This shall not affect the layout that anyone else sees.
- Chairperson / Participants should be able to have following feature controls using Remote Control of video system:  
Mute My Line / Unmute My Line; Mute All Except Me / Cancel Mute All Except Me;  
Change Password; Play Help Menu; Terminate Conference; Start Personal Layout;  
Start Recording / Stop Recording / Pause Recording, etc.

#### **x. Network Support**

- IP H.323, SIP, H.320, PSTN and VoIP voice
- 10/100/1000 Mb interface
- 64 Kbps to 4 Mbps conference data rates

**xi. Security**

- AES media encryption without any port loss
- Transport layer security for management and SIP
- Conference participants PIN code authentication via LDAP interface
- Tiered permission levels include Administrator, Operator, Chairperson and Auditor
- GUI user authentication
- Secure mode option to prevent uninvited participants from joining the conference
- It should be possible to separate management and media networks

**4.9 Management Application Specifications****System Components:**

- Management application should be 1U Rack-mountable chassis based solution with Quad-core Intel Xeon processor with HDD of min 50GB capacity. It should also have at-least 2 x USB drives with CD/DVD read drive.
- The system should be built on a powerful platform to support large registration of 300 endpoints or more.
- It should be possible to integrate the system with existing corporate directories.

**Supported Network Services:**

- The system must support IP & ISDN endpoints.
- The system must have an Auto-discovery feature that allows it to discover the closest network domain controller and/or AD server.

**The proposed solution should be an integrated scheduling and device management platform for video conferencing that must offer these features:**

- Device monitoring and management
  - Conference monitoring and management
  - Automatic device provisioning and Automatic device softupdates
  - Scheduled device provisioning and Scheduled device softupdates for standardly-managed and legacy devices
  - On-demand conferencing
  - Conference scheduling
  - Advanced routing to distribute audio and video calls across multiple media servers (MCUs), creating a single seamless resource pool
  - Role based user access depending upon user permissions
- Provide system reports like site statistics, IP CDR, endpoint usage report, conference type report,
- Gatekeeper and neighboring gatekeeper functionality

- Access to global user and room directories for on-demand and scheduled calls. Directory services include:
  - Presence and contact list functionality
  - Global Address Book functionality for standardly-managed devices
  - H.350 and LDAP directory functionality. H.350 defines directory services architecture for multimedia conferencing for H.323, H.320, and generic protocols.
- Desktop client—an easy-to-use video and audio conferencing application that allow users to see and hear the people they call from their desktop system.

#### **4.10 Eagle Eye Director Specifications**

The EagleEye Director Camera tracker brings the high-quality experiences of dedicated video productions to the world of video conferencing, all within a compact, display-mounted form factor.

The EagleEye Director intelligent software, dual cameras and advanced microphones automatically and seamlessly transition between live shots of the active speaker and group, allowing participants to focus on their meeting topic and freeing them using the remote to manually pan, tilt, and zoom.

Once a voice has been located in the room, the camera tracker then relies on facial recognition algorithms to determine if the user is speaking to other users in the room or to the far end. The camera will automatically zoom in and position the speaker in the right proportion. This three-step process gives the far-end participants an immersive experience.

Limited required cables make setup quick and easy

The camera tracker automatically positions the live speakers in the center of the monitor, eliminating the need to use the remote control to pan, tilt, and zoom.

##### Connections:

- 1 HDCI out to video system
- USB for diagnostics & local upgrades
- 
- tereo phoenix connector for remote audio processing

## **5 SOLUTION TO BE DEVELOPMENT, CUSTOMISED & INTEGRATED WITH THE COMMAND CONTROL CENTER**

### 5.1 Public Information System

The public should be able to share any critical information that they may have. It should be able to provide more platforms to the citizen to share critical information that they may have eg a video of the crime scene etc. It should be possible for citizens to share information as they may do on Facebook or YouTube. This module should have a video as well as audio interface. It should also include an Enquiry Management System. Citizen can raise an enquiry through a web. This enquiry should go to a public server / intermediate server which in turn send this enquiry to the relevant department and the relevant officer based on jurisdiction and authority. The relevant department or officer shall be able to revert to the enquiry. it should be hierarchy based.

System shall deliver a fully integrated Public Information System within the Command & Control Centre. This PIS functionality shall allow the command and control centre to both consume and output data from publically available internet sources such as:

- ✓ YouTube
- ✓ Facebook
- ✓ Twitter

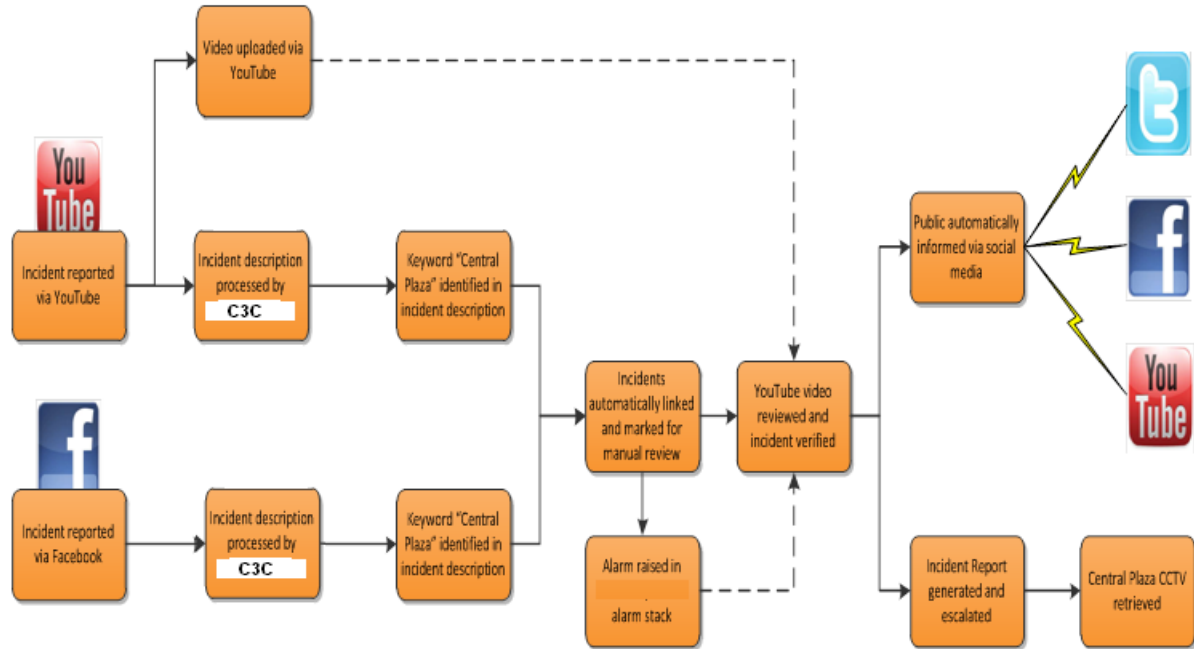
## 5.2 Data Consumption

- i. **Command & Control centre** shall subscribe to a number of data input points to allow members of the public to report incidents to Haryana Police, typically through the use of a mobile device.
- ii. **Persons** shall be able to send direct messages to Haryana Police through Facebook and Twitter, which shall be logged and processed by the C3S Logic & Workflow Engine. C3S shall analyse the received messages for pre-determined keywords in order to automatically priorities the potential incidents and raise notifications to the Command & Control Centre accordingly.

## 5.3 Data Output

- i. The command & control centre shall also be able to publish data to the same web services (e.g. Facebook, Twitter) in order to provide early mass notification of incidents to the general public, as well as providing regular status updates to increase the exposure and public profile of Haryana Police.
- ii. It is strongly suggested that the automation of such data output be strictly limited and that manual incident validation is employed prior to releasing data to the general public.

## EXAMPLE SCENARIO



#### 5.4 Public Management/ Enquiry Management System

- i. Citizen should be able to register an FIR through the web. This FIR should go to a public server / intermediate server which in turn send this FIR registration detail to the relevant department and the relevant officer based on jurisdiction and authority. This should be workflow based.
- ii. Apart from the capabilities of C3S solution already explained in the RFP document, it is also expected that the overall solution should include capabilities that would enable citizens to be able to register grievances and other enquiries through a web based interface. This grievances / enquiry should then be routed to the relevant department/ officer based on jurisdiction and authority. The relevant department or officer shall then revert to the grievances / enquiry.
- iii. One possible approach to achieve this could be via a web based Portal interface wherein citizens can register their grievances/ enquiries. After due qualification and filtration these enquiries/grievances raised by public can be passed on as an email alert/ notification to the Operator / Supervisor in Control Room. From there Operations Commander can create an incident in the master Emergency Management Application and assign it to appropriate department/ officer.

#### 5.5 Information Management System

- i. There should be a provision for managing the information sent to the police department regarding crime or incident via SMS or MMS or any other kind of information be it no. of available resources or weapons. The solution should be able to extract this information from these servers and show it up on the central command screen. This should be a big enabler for decision making.
- ii. Command & control centre shall deliver fully cohesive Information Management functionality within the Command & Control Centre as well as providing in-built Incident Management capabilities.
- iii. Through the single Common Operating Picture (COP) provided by C3S, the operator(s) shall be able to access all information pertinent to managing a situation immediately at the point of need.
- iv. The information required to manage a situation will inevitably vary depending upon the type and scale of the incident. The flexible C3S Logic & Workflow Engine shall be used in order to determine which information is automatically presented to the operator(s) whilst also allowing them to interrogate any number of other data points as part of the incident management process.
- v. An example of integrated Information & Incident Management would be a scenario which required local armed responders to immediately attend the incident location. In such a scenario, the Command & Control Centre (C3) operator would be able to:

- ✓ Receive immediate notification of the incident

- ✓ Visualise nearby local responders

- ✓ Visualise nearby weapon stores including data of types and quantities available

- ✓ Instruct the local on how to most effectively respond

Key data points which are typically relevant to C3S operators within a Law Enforcement application are:

- ✓ Automatic Person / Vehicle Location

- ✓ Automatic Resource & Asset Location

- ✓ 3rd Party databases (e.g. CCTNS, ANPR etc.)





## 5.6 Incident Management System

- i. In case of an incident the police department should be able to view all the information. The information regarding the casualties will be loaded by different hospitals onto the police server . The solution should be able to extract this information from these servers and show it up on the central command screen. Eg at the time of bomb blast, it should be able to manage information about how many people were killed, how many injured, how many people are in which hospital, how many police force has been deployed at site etc. record management is an important aspect of this.
- ii. By delivering a Common Operating Picture (COP) and complete Situational Awareness within the Command & Control Centre (C3), C3S provides a highly effective Incident Management platform. Operators shall have access to all relevant information at the point of handling any incident, whether it is immediate retrieval of nearby CCTV footage or visibility of available resources.
- iii. C3S shall provide the central repository for all incidents and as such the operators managing a particular incident shall also have visibility to other active incidents in the vicinity.
- iv. Operators shall have the ability to view the incident location on the GIS surface, with nearby assets overlaid and immediately contactable through an integrated aggregated communications platform.
- v. Pre-determined evacuation routes and muster points shall be clearly highlighted, and the in-built PTZ leasing functionality of C3S shall provide the Command & Control Centre (C3) with the ability to manage access the nearby CCTV feeds, disabling external parties from controlling the cameras critical for Haryana Police to effectively manage the incident.

## 6 MINIMUM SUGGESTIVE BILL OF MATERIAL

Sr. No.	System Description	Unit	Qty
<b>1</b>	<b>IP based EOC Clients cum Operator Workstation</b>	<b>Nos</b>	<b>15</b>
	Windows based PC Workstation with 3 VGA interfaces	Lot	1
	Display Monitors (2 Per Operator)	Lot	2
	PTT based Mic with Headset	Lot	1
	Touch Panel based Communication Device	Lot	1
	Emergency Management Client Application License	Lot	1
	Integrated Communication Software Client License	Lot	1
	GIS Application Client License	Lot	1
	PSIM Client Application Software License	Lot	1
	Local Call Recording Software & Storage	Lot	1
<b>2</b>	<b>Video &amp; Content Analytics Management Server (In Redundant Mode)</b>	<b>Nos</b>	<b>2</b>
	High End Hardware Server with Windows	Lot	1
	PSIM (Physical Security Information Management) Software Server License	Lot	1
	CCTV Integration Module	Lot	1
	VCA Integration Module	Lot	1
	CCTV Module License	Lot	1
	Camera device Licenses	Lot	50
	GIS Integration Module	Lot	1
<b>4</b>	<b>Communication Server (In Redundant mode)</b>	<b>Nos</b>	<b>4</b>
	High End Hardware Server with Windows	Lot	1
	Radio Interface Hardware (VHF/UHF)	Lot	20
	GSM Modem Interface	Lot	20
	PSTN / Analog Interface Hardware	Lot	4
	VoIP Interfaces	Lot	20
	Integrated Communication Server Software	Lot	1
	Interconnection Panel for multiple interfaces	Lot	1
	Satellite TV Antennas	Lot	1
<b>5</b>	<b>Emergency Management Application Server (In Redundant Mode)</b>	<b>Nos</b>	<b>2</b>
	High End Hardware Server with Windows	Lot	1
	Dispatch & Emergency Application Server Software License	Lot	1
	Reports & Statistics License	Lot	
<b>6</b>	<b>GIS Server</b>	<b>Nos</b>	<b>2</b>
	High End Hardware Server with Windows	Lot	1
	GIS Application Server License	Lot	1
	Mobile Application/ AVLS Server License	Lot	1

	Integration with existing GIS DB	Lot	1
<b>7</b>	<b>Video Wall Display</b>	<b>Nos</b>	<b>1</b>
	High End Windows Server with Video Interfaces (Video Wall Processor)	Lot	2
	46" W-XGA, 1366 x 768,9(Columns) x 3(Rows) Matrix Display Systems	Lot	27
	Remote & Sensor Unit	Lot	5
	Wall Mount Kit &Calibration Kit	Lot	27
<b>8</b>	<b>Mobile Command &amp; Control Vehicles</b>	<b>Nos</b>	<b>1</b>
	Customized mid-size Vehicle with space for two Operators	LOt	1
	Battery Backed Wireless Cameras with 8Hr power backup	LOt	5
	Vehicle Mounted Network Video Recorder	LOt	1
	Surveillance Workstations	LOt	2
	Mast controlled Vehicle mounted PTZ Camera	LOt	1
	Radio Interface	LOt	2
	GSM Interface	LOt	1
	Vehicle Mounted GPS Tracking Device	LOt	1
<b>9</b>	<b>Database Server</b>	<b>Nos</b>	<b>2</b>
	High End Windows Server with 8 Video Interfaces	Lot	<b>1</b>
	Oracle Licenses	Lot	<b>1</b>
	Disk Storage worth 10TB	Lot	<b>1</b>
<b>10</b>	<b>Integration Services</b>	<b>Lot</b>	<b>1</b>
	CCTV & VCA Integration with District HQ	Lot	20
	CCTNS Integration	Lot	1
	Dial-100 Integration with DHQ	Lot	20
	Video Wall Application Integration	Lot	1
	GPS Tracking integration with District Centers	Lot	20
<b>11</b>	<b>Local Networking &amp; Cabling</b>	<b>Lot</b>	<b>1</b>
	Layer 3 Switches - 24 port	Nos	8
	Layer 2 Switches - 24 port	Nos	8
	30U Racks & Patch panels	Nos	4
	Firewall	Nos	1
	Intrusion Detection System	Nos	1
	10 KVA online UPS		1
	25 KVA silent Genset		
<b>12</b>	<b>Solution to be Developed, Customized &amp; Integrated With the command control center :-</b> a. HRMS , b. CCTNS , c. Dial 100 , d. Window to Property , e. Dynamic Resources Management System , f. Vehicle Tracking system , g. Complaint Management System ,	<b>Nos</b>	<b>13</b>

	<ul style="list-style-type: none"> <li><b>h. Biometric System ,</b></li> <li><b>i. Services Tracking System.</b></li> <li><b>j. passport verification management ,</b></li> <li><b>k. security agency verification</b></li> <li><b>l. City Surveillance ,</b></li> </ul> <b>Criminal Investigation Management System</b>		
	Public information system	Lot	<b>13</b>
	Public management/ enquiry management system	Lot	13
	Information management system	Lot	13
	Incident Management System	Lot	13
<b>13</b>	<b>Video Conferencing Equipment for 23 locations</b>	<b>Lot</b>	<b>23</b>