GEOSPATIAL WORLD FORUM
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Safe City & Crime Analytics for Smart Cities
Safe City & Security Requirements

Challenges

- More than 10% YOY growth in crime rates

Crime Rate  Urbanization  Terrorism Threats  Public Disorder

To meet the above challenges, Need technologies

- Multi Agency Collaboration  Mature PSIM
- Emergency Management  Emergency Response
- Data Analysis and Information Sharing  Business Intelligence & Social Media
- Enhanced Situational Awareness  Geo-Enabled Services
- Better quality data, voice and video transmission  Advanced ICT Technologies
- Identification of Onsite Threats  Mobile responders/Advanced Video Analytics

Emergency Management

Emergency Response

Data Analysis and Information Sharing

Business Intelligence & Social Media

Enhanced Situational Awareness

Geo-Enabled Services

Better quality data, voice and video transmission

Advanced ICT Technologies

Identification of Onsite Threats

Mobile responders/Advanced Video Analytics

Crime Rate

Urbanization

Terrorism Threats

Public Disorder
Safe City an Integral part of Smart City

**Physical Safety and Security**
- Access Control, Video Surveillance
- Intrusion Detection, Biometrics, Perimeter Sensors, fire Alarm Panels, Detection Devices (Smoke, heat, Gas, Flame)

**Logical Security and Communication**

**Energy Management**
- Energy Logistics, Distribution, Channels (Electricity, water, gas), Utility Monitor, Heat, Lightening, Backup Power, Leakage Monitor

**Building Management**
- Building Automation, Building Control, Networked Systems, Crisis Management Solution (Power Infrastructure Damage, evacuation)

**Response Management**
- Integrated Fire Department, Police and medical Services, Centralized and remote C2, Scalable Decision Making Process

**Mobility Management**
- Traffic Control and Monitoring (Rail, Underground, buses, personal vehicles), 24/7 Supply Management (Logistics)
Safe City Technology Components

**Network Infrastructure**

- **Input**
  - CCTV Cameras
  - SPEED DETECTION | ANPR
  - GUNSHOT DETECTORS
  - EMERGENCY CALL BOX
  - Wi-Fi Hotspots
  - Tactical C4i
  - CITIZENS APP
  - Collaborative Monitoring
  - E-Challan
  - DIAL 100
  - SMS Gateway

- **Viewing Center**
  - LED SCREEN
  - WORKSTATION
  - Operators
  - IP PHONE
  - ROUTER | SWITCH

- **Command Center**
  - VIDEOWALL | DISPLAY
  - SECONDARY STORAGE
  - INDOOR CAMERAS
  - POWER BACKUP
  - NETWORKING
  - FIRE SAFETY SYS
  - ACCESS CONTROL
  - C2 CLIENT Operators

- **Data Center**
  - Data Center Services - Fault Tolerant site infra (multi-layered redundancy in capacity components like power systems, HVAC & fire detection)
  - VIDEO ANALYTICS
  - VMS
  - LDAP | Antivirus
  - GIS SERVER
  - FACE RECOGNITION
  - SWITCH, ROUTER, FIREWALL
  - DATABASE
  - PRIMARY STORAGE
  - LOAD BALANCER
  - ANPR SYSTEM
  - EMS + HELPDESK
  - C2 SERVER
  - DATABASE

- **Dissemination**
  - Variable Message System
  - PA System
  - SMS/Email Alerts
Integrated Safe City Solution

- Large Scale Video Wall
- Dashboard view of Situations
- Road Network Surveillance
- Coastal Security Mgmt.
- Homeland Security Mgmt.
- Multi-Agency Emergency Mgmt.

- Command & Control
- CAD
- Data Fusion
- Crime Analytics
- Citizen Portals & Mobile apps

Remote Mgmt. (Executive Level)
Field Response Team (MDT)

Integrated GIS & Sensors based Safe City Solution for Smart City
Computer Aided Dispatch (Dial 100/112)

• Dial 100 is a toll free number which provides police emergency services

• Citizen in distress can contact police control room by dialing 100 through land line or mobile

• Police control room staff provides immediate assistance

• Other emergency services such as fire, medical, women help lines etc also provide similar emergency services.

• Computer aided dispatch system is GIS & GPS based system designed for police control room to achieve above objective
Necessity for CAD System

- Crime Control
  - Quick & accurate location information
  - Improved utilization of constrained resources
  - Demarcating of high risk areas

- Quick response to Public Distress Calls
  - Real-time locating of patrol vehicles at any time
  - Directing vehicles by shortest route
  - Quick dispatch
  - Timely, accurate & secure information

- Effective Management of Information & Analysis
Multi-media Devices for Emergency Reporting

Transition from Voice Centric to Multi Media

Enables exchange of image, video, text message
Next Generation Computer Aided Dispatch

- Control Room
- SMS / Email Integration
- Mobile Data Terminal
- Hand Held Mobile Data Terminal
- Police Station
- Senior Officers Smartphone App
- Smartphone SOS App For Citizen
- CCTV Integration
- Smartphone App For Traffic Police
- Multi Agency Support
- Radio Integration
- Mobile Data Terminal

Rolta GeoCAD
Location Based Services

Mode of Communication:
- Call from Mobile Phone
- SMS from Mobile Phone
- Email
- Call from IP Phone

LBS Service Gateway

Control Room CAD

Control Room Operators
Interoperability Between Various Govt. Agencies

Integration Framework

- Court
- Indian Army
- Jail
- Parole
- Law Enforcement (Dial 100, CBI, Special Police)
- Fusion Centers
- Regional Database (CCTNS)
- National Database (NCRB)
- Other Legacy

Mobile Applications

Fire Services (101)

Hospital (103, 108)

Telephone

Emergency Management
- Lower Performance
- High Manpower
- Fragmented Monitoring
- Low Correlation
Unified Platform - COP
Seamless Integration
Reduced manpower
Streamlined processes
High Situational awareness
Geographic perspective
A Seamless Integrated Framework
Mobile Data Terminal for Field Resources

- Authentication
- Incident Detail
- Shortest Path
- BOLO
- Patrol Chart
- Traffic Impactor / Alternate route
- POI Creation
- Action Taken Report (ATR)
- Messaging
- Image/Video Transfer
- LOI Search
Mobile Applications for Citizen Safety
Mobile Console

- Alerts View: Dispatched Alert View, Report Incident manually, Acknowledge Alert, Request to Close Alert, Threat Level Indication
- Map View: Display of Sensors, Alert Indication on map, Map view (All, Geo, Track View), Map Layer On/Off
- Video Interface: Live Video of Sensor / Associated camera, Alert Time Pre-Post Recorded Video
- SOP View: View of Dispatched Task Complete and Comment, Review of Email /SMS escalation, Provision to Reject Task
SOS Apps - Integrated With CAD System

**SOS Apps on Smartphone**
for Emergency Alert

**CAD at Police Control Room**

**Access for Parent / Guardian Smartphone**

Alerts Send
Integration with Existing IT Landscape

**Crime and Criminal Tracking Network & Systems (CCTNS)**
Automated workflow based application for registration, investigation and prosecution

**Zonal Integrated Police Network (ZIPNET)**
Records of missing children, persons with name, age, location etc. Records of unclaimed, unidentified dead bodies, Records of vehicles stolen with vehicle number and other details, Information of disowned vehicles, mobiles lost or stolen

**Automated Fingerprint Identification System (AFIS)**
Collection and Coordination of Criminal's Finger Prints

**Crime Criminal Information System (CCIS)**
Records of Criminal Case Entry

**Online Criminal Dossier**
Digitization of FIRs, Criminal data (features, photographs etc.)

**Traffic Monitoring System**
Application for issuing e-challans for offending vehicles, notices and records of traffic violence

**MACT Application**
Database of all registered the vehicles and their owners. Note: Motor Accident Claim Tribunal (MACT) records information of vehicles involved in accidents

**Licensing Branch System**
Records of licensed arms with owner details, License details of hotels and cinemas in Delhi
**Integration with Existing IT Landscape**

**GIS-GPS based Automatic Vehicle Tracking System - (AVTS) for PCR vans**
A GIS based application for tracking the location of PCR Van

**Summon Warrant System**
It keeps track of court processes (summon/warrant) details like court name and address, FIR No., FIR year, to whom it has to be served, date of appearance, date of receiving in summon warrant cell, date of service, who served it etc.

**Web-based Personnel Information System (WebPIS)**
It maintains the detailed information of each and every employee of Delhi Police, such as Personal & Official

**e-Beat Book and Suraksha**
Mobile and web based e-Beat book App was developed to digitalize the process of information maintained at Beat level. Provide mobile App to assist Beat staff to make entries about day to day activities within an electronic log book

**Court Case Monitoring System**
To monitor all pending criminal cases in the High Court and Supreme Court and all civil cases, with their day to day progress in these courts. CCMS also monitors the performance of Govt. Counsels and Pairvi officers.

**PCR100 number facility**
System for taking calls from public and forwarding it to respective police stations, PCR vans.

**Social Media**

**C4I**
System for receiving and monitoring CCTV feeds from field locations
Crime Analytics

- Hotspot Analysis
- Pin Mapping
- Change Over Time mapping
- Journey to Crime
- Incident Count Mapping
- Crime Profile Mapping
- Suspect Analysis
- Trend Analysis
- Repeat Incident Count
- FIR Status Mapping
- Neighborhood Analysis
- Pattern Analysis
Crime Analytics Dashboard – Illustrative Examples

Mumbai

Crime Growth

FIR Status

Pending: 10%
Open: 25%
Closed: 65%

Crime Pattern

Trend Analysis

Crime Against Women Status

Solved: 41
Non-Operational: 11
Intelligent Dashboards & Reports – illustrative Examples

- Crime Related Reports
- Downloadable reports
- Investigating Officer Details
- Drill down to critical details
Crime Analytics – illustrative Examples

- **Hot Sport analysis**
- **Suspect analysis**
- **Crime Profile analysis**
- **Link analysis**
GIS based Decision Support System – illustrative Examples

- Journey to Crime analysis
- Pin-Mapping
- Neighbourhood analysis
- Repeat Incident Count

*Neighbourhood analysis*
Conclusion

Safety of citizens, critical infrastructure & services integral part of smart city

Multi-agencies synergized approach essential for responding to major incidents /disaster

Intuitive, user-friendly environment for analyzing incident locations

Data Fusion from multiple sources & identification of spatial patterns from point locations

Actionable Intelligence from advanced spatial analytics for predictive & preventive measures

Confidence Building amongst the citizens & deterrent to bad actors.
Rolla Contribution for Smart & Safe City

- Rolta GeoCAD – Emergency Response System
- Rolta Command & Control solution for:
  - Smart City
  - Critical Infrastructure Protection (Land)
  - Critical Infrastructure (Marine)
  - Coastal security
- Rolta Suraksha – Mobile solution for SoS
- Rolta Mobility Solutions
- Rolta Oneview
- Rolta Onpoint
- Rolta iperspecive
Thank you