Intelligent City Operations and Management Centre (ICOMC)

Bhubaneswar Smart City Limited (BSCL)

Sept 22, 2017
Agenda

1. Overview
2. Cross Learning Sharing
3. Control Center Inputs
4. BSCL ICOMC Status
Overview - City Parameters

Population Statistics

- **BMC Area (in sq. km.):** 1m
- **Citizens:** 161

160% Increase in area

- **1981:** Population 2.28 Lakh
- **1991:** Population 4.23 Lakh
- **2001:** Population 6.48 Lakh
- **2011:** Population 8.41 Lakh

Population Density: 67 PPH

- Lower than average density of Large Cities (125-175 PPH) - UNDP - 2014

36%

3.55 Lakh Population live in Slums, spread over 5% of BMC area

8.13% Senior Citizen 60+ yrs.

17.2% Youth Under 18 yrs.
Overview – Smart City

• Moving towards a liveable, transit oriented, eco and child friendly city

• Bhubaneswar Smart City Limited (BSCL) is the SPV formed for implementation of Smart City Initiatives
Overview - Pan City Components

- Command & Control Centre
- Telecommunications & ICT
  - TRAFFIC MANAGEMENT
  - Transit Operations
  - Parking Management
  - Common Payment Card
  - Emergency and Response Management
- Utilities
- Citizen Engagement
Solution Summary

Bhubaneswar Smart City

Traffic Management
- RLVD
- ATCC
- PAS
- DMS
- e-challan
- TARS

Tracking System
- AVL
- OBITIS H/w
- PIS
- TMS
- Electronic Ticketing

Parking Management
- On/ Off Street PMS
- MLCP

Response & Incident Management
- CCTV Surveillance System

Governance & Connect
- E-Gov
- ERP
- Waste Mgt
- Kiosks
- Edu & Health Management

Communication Network
- OFC
- Wi-Fi
- Environmental Monitoring

ICOMC
- CCC
- BMS
- GIS
- Data Hosting
- IT Infrastructure

Key Components
- Video based speed detection
- 2 level error elimination
- Thermal Camera
- Customized solution for India
- Latest OBU compliant devices
- Distributed Architecture
- Minimal wired system
- 100% IP rights
- Complied with ONVIF profile S
- Hardware Agnostic
- Multiple deployment locations
- Strong India Specific Localization
- Capability to support Next-Gen Technology
- Cyber Security guidelines
- Real time stream analytics
- Rule Engine based Sensor Data Correlation

Features

Integrated solutions delivered
Smart Traffic Management System

**Architecture**
- TVDS
  - License plate number detection
  - Identify stolen/ suspected vehicles
  - Over Speed detection up to 150km/hr.
  - Integration with Vahan and RTO
  - Integration with Smart City Platform
- ATCC
  - Thermal Technology
  - Non intrusive Technology
  - Detection up to 4 Lanes / camera
  - High Uptime, Reliable & Scalable
  - No wear & tear
  - Integrated with Smart City Platform
- TARS
  - Easy RCA
  - Isolating common features in accident

**Deployment**
- 25
- 93
- 20

**Benefits**
- Reduced peak hour congestion
- Enhanced Traffic planning
- Safety & Air quality
- Traffic updates to citizens
- Coordinated management

**Highlights**
- TVDS
- ATCC
- TARS

**Benefits**
- Reduced peak hour congestion
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- Coordinated management

Reduction in congestion and enhanced air quality
Smart Tracking Management System

Architecture

Highlights
• AVL Tracking & Scheduling
• Incident Management, Harsh Breaking, Route violation, Speed violation & Panic button
• Report Analysis
• Over the Air upgrade
• Integrated data collection and analysis
• Integrated with Common Payment Card
• Mobile app for citizens
• Scalable to cater more than 50,000 vehicles

Deployment

Benefits
• Safe, Comfortable and Reliable
• Increased accountability
• Better Fleet Management
• Enhanced scheduling & Planning
• Information accuracy
• Enhanced security
• Highly automated

Enhanced fleet efficiency and management
Smart Parking Management System

Architecture

- Availability Indicators On Floor
- Ultrasonic sensors and Light indicator
- Senior Controller
- ZigBee Network
- Central Parking Mgmt
- LTS Video Storage
- Internet
- WAN
- Local VMS
- Parking Server
- LED Availability Indicator
- Entry
- Exit

Highlights

- Maximum wireless system
- Supports all weather conditions
- Fully automated parking areas
- Real time parking availability
- Advance Information and Guidance
- Integration with Payment Gateways
- Allow advance booking of a parking spot at a premium rate.
- Facilitate regulation of parking tariffs and overall strategic city parking policy
- Integration with common payment card and city-app

Deployment

- 5000 On-Street
- 1500 MLCP

Benefits

- Real-time information on available parking slots
- Reduction in congestion
- Reduced carbon emission
- Digital payment to avoid leakages
- Improved citizen experience

Improved City Experience
Emergency Response & Incident Management

### Architecture
- Data Centre STPI
- DVM DB Primary
- DVM CS Primary
- Central Users of Video Surveillance System
- Access to Video Cameras and Archives from VSOM

### Highlights
#### Surveillance
- IP based distributed architecture for proactive monitoring
- N+N redundancy for NVR/VMS
- Image Blocking
- Digital Signatures
- Edge recording & auto backfill
- Hardware agnostic
- Integration with Command control system

#### Analytics
- Auto Tracker
- Adaptive Motion Detection
- Abandoned Object
- Camera Sabotage
- Object Removal
- Stopped Vehicle
- Intrusion Detection & Counting analytics

### Deployment
- 850
- 150

### Benefits
- Integration with emergency services
- Pro-active monitoring with automated escalations based on analytics
- Safe-city
- Trend analysis of threat prone activities/areas and adjust eco-system accordingly

Increased Safety for Citizens
Communications Network

Salient Features:

- Combination of wired and wireless network to meet both BSCL and non-BSCL connectivity requirements
- End-to-end fibre optic infrastructure to be used for connecting all services in a dual-ring architecture
- Public Wi-Fi services enabling broadband to be affordable, accessible and available
- Secured network
- Enable public organizations to be digital using dark fibre infrastructure

Scalable, Robust & Self healing communication network
Governance & Citizen Connect

Subsystems

- **e-Gov**
  - Collaborative decision making with monitoring
  - Digitization of citizen services
  - Citizen feedback for city operations

- **Kiosk**
  - Interface for citizen services
  - Integrated Wi-Fi and Emergency Call Box

- **ERP**
  - Digitization of BSCL with one common interface for decision making
  - Digital file movement
  - Integrated modules including Finance, HR, Procurement, Asset Management, Maintenance etc

- **Education & Healthcare**
  - Collection of behavioral information of children under 6 years of age
  - Monitoring at command center for safe environment
  - Digital learning and virtual classrooms

- **Solid Waste Management**
  - Ultrasonic sensor for Bin Volume
  - RFID tags and reader
  - Real time tracking

Highlights

- **e-Gov**
- **Kiosk**
- **ERP**
- **Education & Healthcare**
- **Solid Waste Management**

Deployment

- **Smart Classrooms**: 13
- **E3C**: 40
- **ERP users**: Up to 1,000
- **Bin points**: 1,300

Benefits

- Accountability, transparency, responsiveness for public service delivery
- Single Window Solution
- Fast grievance redressal
- Improved citizen experience

Increased accountability, transparency and responsiveness for citizens
Bhubaneswar Solution Layered Topology

User Layer
- Mobile App
- Dashboards, Reports
- City Workforce
- Help desk

Command and Control
- GIS (Location Analytics)
- Vehicle Location
- Social Intelligence
- Business Intelligence (BI)
- Mobility
- IoT Platform
- Collaboration
- Big Data Platform
- Correlation

Integration Layer
- Surveillance, PA & ECB
- Adaptive Traffic Counter & Classifiers
- Traffic Enforcement System (ANPR, RLVD, Speed & E-challan)
- Smart Pole (LED light, Wifi, Environmental sensor, Bill Board)
- Variable Message sign Board
- EMS

Subsystems
- Data center at SDC
- Server
- Storage
- Network Devices
- Security Devices
- Power Backup and Cooling
- Access Control

Replication
- Replication Software
- Replication Bandwidth

DR on Cloud
- Server
- Storage
- Network Devices
- Security Devices
- Power Backup & Cooling
- Access Control

City Network Wired, Wireless & Wifi

Street Layer
- Environment
- Camera
- Wifi AP
- Smart Pole
- ECB
- PA
- VMD
- ATCS

Sensing layer

Existing System integration
- Water
- Electricity
- Waste

3rd party Systems

Single Window Operation – Ease of Solution
Cross Learning & Experience
Pointers

- No Perfect Solution
- SI & MSI Market
- Determining the Packages for System Integrators
- Capacity Building & Change Management System
- Design Documents
  - As-Is Documents
  - BPR
  - DPR
- Bid Development
  - Contractual Terms
  - Payment Terms

ICOMC Modules
- Traffic Management
- Transit Operations
- Parking Management
- Common Payment Card
- Emergency & Response Management
- Command Control Center
- Communications System

Tendering Packages
- Automatic Traffic Signal System
- Common Payment Card
- Master System Integrator
• Questions to Ask?
  • What is the status of Control Centers today?
  • Which streams to integrate at ICOMC? What are the priorities?
  • Who are the stakeholders who should sit in the Control Center?
  • What is the Concept of Operations? Use Cases?
  • Should your Data Center be on Cloud?
  • Do we need the DR site? Where should it be located?
  • What is the space required for Control Center?
  • How long should be the O&M Period?
  • Is monetization from MSI realistic?
  • WHAT ARE WE TRYING TO ACHIEVE?
    • KPIs – and the targets?
ICOMC Completion Dates
Pan City Solution – Tender Packages

ICOMC Modules

- Traffic Management
- Transit Operations
- Parking Management
- Common Payment Card
- Emergency & Response Management
- Command Control Center
- Communications System

Tendering Packages

- Automatic Traffic Signal System
- Common Payment Card
- Master System Integrator

Current Status

- Tender Awarded to (M/S Envoys Electronics)
- Work in Progress – Commissioning of Pilot Intersections Completed
- LOA issued to ICICI Bank in Sept’2017
- Technical evaluation of the bids have been completed. Financial bids opened dated 20th Sept, 2017. Honeywell has emerged as L1. Selection criteria being QCBS, financial bid validation is under progress.
Project Milestones (Indicative)

1. **Traffic Management**
2. **Smart Tracking**
3. **City Wi-Fi + OFC**

- **System Design**
  - Oct, 2017

- **Smart Response**
  - Aug, 2018

- **Completion**
  - May, 2019

- **Command Control Centre**
  - Mar, 2019

- **O&M Phase**
  - May, 2019

- **e-Gov + ERP**
  - Nov, 2018

- **Smart Parking**
- **Temp Command Control Centre**
  - Aug, 2018

- **Jan, 2019**
THANK YOU