Smart Cities Challenge – Amravati Municipal Corporation

October 2015
Topics for discussion

Amravati: Why Smart City?

Key focus areas as part of Amravati Smart City

Key next steps
Why should Amravati be a smart city?

1. **One of the leading city in standard of life in Maharashtra** (population > 6 lakhs, over 93% literacy rate)

2. **Significant industrial potential** - with industries such as textiles (new textile park and handicraft industry)

3. **Educational hub** with over 20 prominent colleges including several medical and engineering colleges

4. **High tourism potential** – particularly in religious tourism (eg. Ambadevi temple, Osmania Masjid) and Ecotourism (eg. Chikhaldara Wildlife Sanctuary)

5. Foremost in e-services: **Auto DCR was implemented** in Amravati, won several accolades
Amravati has huge industrial potential, and the new textile park will further boost its industrial profile

- City is rapidly expanding towards Badnera, 10 km to the south
- Growing as an industrial centre, with cotton mills leading the way. Home to Vidharbha Sugar Mills. Also, sole surviving sugar factory
- At Nandgaon Peth/Saward: 2,700 MW Thermal Power Plant is coming up. Bharat Dynamics Limited (BDL) plans to make air defence missiles
- Significant warehousing potential with CWC presence and APMC godowns
- Amravati Airport to be developed by AAI

**Establishment of 5 star industrial area in Amravati**

- 117 hectares government and 2693 hectares private, **total 2810 Hectors of Land has been acquired by MIDC**
- At the first stage, **1549 Hectors of land has been developed** out of which 542 industrial and 22 commercial plots have been developed
- 510 plots for industrial and 3 plots commercial has been distributed
- 500 hectares of land has been planned for textile park out of which 38 plots has been alloted

Companies such as India Bull Power, Bharat Dynamics, Finley Mills, Inventy Research Industry are present with investment over 12,000 crores
However, there are several areas where urban infra needs to be strengthened

### Overview
- Area: ~270 km².
- Population: ~646,801 (Census 2011)
- Garbage generation per day (tones): 184.90
- dispensaries: 84
- Public Health centers: 56

### Water Supply
- Abundant water resource but supply lower than benchmark (120 LPPCD against 135 LPCD)
- High percentage of bore well ground water table is dwindling

### Sanitation and Solid Waste Management
- No segregation, No recycling, Idea on decentralised recycling to save transport cost
- No treatment of sewerage

### Transportation and connectivity
- Lack of strong bus infrastructure. Currently, 34 buses which are almost out of order.
- 18 parking slots designated, Need to strengthen parking facility
- Inadequate pedestrian infrastructure, no foot over bridges, sub-ways, pedestrian-only traffic signals. No dedicated parking facilities for rickshaws

### Tourism infrastructure
- Shortage of hotels for tourists.
- Absence of kiosks to guide foreign tourists

### Other public utilities
- Absence of adequate public toilets
- Scope for beautification of public gardens/parks
Topics for discussion

Amravati: Why Smart City?

Key focus areas as part of Amravati Smart City

Key next steps
## Key focus areas for Amravati for smart city development

<table>
<thead>
<tr>
<th>Area</th>
<th>Focus Area</th>
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<tbody>
<tr>
<td><strong>1. Area based development</strong></td>
<td>Green field development that will drive economic development and decongest core city</td>
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<tr>
<td><strong>2. Mobility and Safety</strong></td>
<td>Increase in capacity of buses and supporting infrastructure. Installation of CCTV cameras for public safety. PIS and 100% adaptive traffic light system</td>
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<td><strong>3. Water supply</strong></td>
<td>Abundant water supply to achieve the aim of 24*7 water facility and remove the problem of water scarcity</td>
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<td><strong>4. Sanitation</strong></td>
<td>Sewerage treatment plant, drainage infrastructure up gradation and monitoring</td>
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<td><strong>5. Solid waste management</strong></td>
<td>100% garbage collection and segregation at source leading to significant recycling and reduction in waste sent to dumping ground</td>
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<tr>
<td><strong>6. E-services</strong></td>
<td>Superior engagement with citizens, wi-fi zone, enhance mobile led citizen services</td>
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</tbody>
</table>
Key six areas of focus

1. Area based development
2. Mobility & Safety
3. Water supply
4. Sanitation
5. Solid waste management
6. E-services
### Attributes for Area Development Plan for Smart City

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Priority 1 initiatives</th>
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<tbody>
<tr>
<td>Citizen participation</td>
<td>Intelligent government services</td>
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<tr>
<td>Identity and culture</td>
<td>IT connectivity</td>
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<tr>
<td>Economy and employment</td>
<td>Underground electric wiring</td>
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<tr>
<td>Education</td>
<td>Air quality</td>
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<tr>
<td>Mixed use</td>
<td>Open spaces</td>
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<tr>
<td>Compactness</td>
<td>Walkability</td>
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<tr>
<td>Housing and inclusiveness</td>
<td>Sanitation</td>
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<tr>
<td>Energy supply</td>
<td>Waste management</td>
</tr>
<tr>
<td>Energy source</td>
<td>Water quality</td>
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<tr>
<td>Energy efficiency</td>
<td>Water supply</td>
</tr>
<tr>
<td>Safety</td>
<td>Transportation &amp; Mobility</td>
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<tr>
<td>Waste water management</td>
<td>Health</td>
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</table>
Area based development - Areas demarcated

Old Amravati
- Retrofitting
- Cultural and Historic relevance

Nandgaon peth
- Greenfield project
- 500 acres
- Mixture of industrial and residential

Badnera
- Greenfield project
- 500 acres
- Existing railway and proposed airport
Key six areas of focus

1. Area based development
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There is a need to enhance bus fleet capacity and enable it with Passenger Information System (PIS) System

<table>
<thead>
<tr>
<th>Kiosks at bus stops</th>
<th>GPS enabled stops</th>
<th>Enhancement in bus fleet capacity</th>
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<tbody>
<tr>
<td>▪ Enhanced connectivity and usability of city transport, owned by the corporation itself</td>
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<td>▪ 500 PIS in the bus.</td>
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<tr>
<td>▪ Kiosks at bus stops to provide information about public transport and travel planning to users.</td>
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### Key initiatives to be taken

<table>
<thead>
<tr>
<th>Passenger Information System (PIS)</th>
<th>Infrastructure up gradation</th>
<th>Static signages and CCTV</th>
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<tbody>
<tr>
<td><strong>1</strong> Passenger information in 100% buses. Next bus stop name shall be announced in advance in the bus</td>
<td><strong>5</strong> Enhance bus fleet to 150 buses. Allow for mini buses for old city area.</td>
<td><strong>7</strong> Over 500 static signages in the entire city to make it citizen friendly</td>
</tr>
<tr>
<td><strong>2</strong> GPS based automatic dispatching of passenger transport vehicles, headway management</td>
<td><strong>6</strong> Enhance other enabling infrastructure like bus terminals, bus stops and bus depots</td>
<td><strong>8</strong> Installation of CCTV cameras to enhance safety, to be installed at each bus stop</td>
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<tr>
<td><strong>3</strong> Install MUPI kiosks at bus stops provide information about public transport to users.</td>
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<td><strong>4</strong> 90% plus Adaptive traffic light system with state of the art incident management</td>
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### Key issues to be addressed
- Risk of vandalism
- Solid structure to withstand different agitations/destructions or any natural calamities
- Strong monitoring to safeguard against any damages
Key six areas of focus

1. Area based development
2. Mobility & Safety
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4. Sanitation
5. Solid waste management
6. E-services
## Specific Initiatives to be undertaken

### Smart Installation of hard infrastructure

1. 100% water connections in all parts of the city
2. Setting up of water treatment plant with 2055 demand considerations
3. Installation of ultrasonic flowmeters
4. Smart metering at user end

### Regulation and monitoring

5. Build pumping stations & install central monitoring system for all pump stations.
6. Regulations in future planning with respect to grey water treatment.
Key six areas of focus

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6. E-services
Overview of sewerage and sanitation in AMC

- The sewage flows in the open drains
- Construction of new sewage treatment plant is in process
- Septic tanks are generally used by the local people
- 23 pay and use system toilets with capacity of 16 seats
- Biogas is being generated from these toilets at Gandhi chowk and kangarpur biogas

Key Issues in sanitation and sewerage

- Inadequate of coverage of sanitation and sewerage in slum areas
- Lack of public toilets
- Lack of regulation in industrial and commercial waste left into water sources
- No under ground sewerage system
- Insufficient number of public toilets along major roads and at public locations
- Existing drains are old and are in dilapidated condition
Examples of smart sanitation and sewerage management

- E toilets - across the world, and in many parts of India now, the issue of public toilets are being solved through the initiatives of E toilets; toilets that have their own waste water and fecal treatment, come with grievance system of their own and can be used by inserting a coin.

- Global examples indicate a smart tracking system for waste water flow and treatment and monitoring of leakages.

- Smart water pollution regulation to Save water bodies.
Specific Initiatives to be undertaken

**Smart Installation of hard infrastructure**

1. Build pumping stations & install central monitoring system for all **pump stations**.

2. Setting up of sewerage treatment plant with 2055 demand considerations.

3. Installation of **ultrasonic flowmeters** at all waste water treatment plant center and major pumping stations.

4. **Smart mapping of public toilets** to gauge further need, as well as work on **real time repair and maintenance**.

**Special focus on slum mapping, awareness and management of sanitation**

5. **Community based demand mapping of Public toilets**

6. **SMS based grievance redressal** for slum pockets.
Key six areas of focus

1. Area based development
2. Mobility & Safety
3. Water supply
4. Sanitation
5. Solid waste management
6. E-services
Solid waste management

Overview of SWM in AMC

- Current waste generated: **184.90 metric tonnes (MT) per day.**
- Debris & slits: **89.71 T**
- Waste generated: 274 gram per person
- Total budget - Rs 1.80 crores

Key issues in solid waste management

- **Dumping grounds** – Sakuli road (27 acres)- 7kms away from city
- **Total staff MCGM payroll** - 799 A.M.C employees and 685 contractual labours 685

- Scale of waste generated
- Segregation of SW
- Public awareness
- No space for landfill
- Permissions
- Litigation
- Illegal construction on Dumping grounds
The following initiatives are currently in place by the AMC on SWM:

- The Corporation has taken various programs to create awareness among the local people regarding the significance of the solid waste management, which includes the following steps:
  - Pamphlets distribution
  - Creating awareness through loudspeakers
  - Door to door campaign
  - Media publicity
### Specific Initiatives to be undertaken

<table>
<thead>
<tr>
<th><strong>Introduction of VMTS and smart features</strong></th>
<th><strong>Re-engineering dumping grounds towards smart waste management</strong></th>
<th><strong>Mass awareness and training on SWM using available resources</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1</strong> Implementing VTMS in all 81 wards of Amravati</td>
<td><strong>6</strong> Redesigning landfill with sensors to track amount of waste collected</td>
<td><strong>9</strong> Awareness campaigns to be conducted for sustainable waste segregation at household level through social media</td>
</tr>
<tr>
<td><strong>2</strong> Special bins for dry and wet waste collection at source</td>
<td><strong>7</strong> Conversion of waste into energy at dumping ground</td>
<td><strong>10</strong> Regulation and monitoring of household waste segregation</td>
</tr>
<tr>
<td><strong>3</strong> Efficient collection and recycling of dry waste</td>
<td><strong>8</strong> Detecting different kind of waste and segregating appropriately</td>
<td><strong>11</strong> Mobile app and online platforms for understanding segregation better</td>
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<tr>
<td><strong>4</strong> Biogas plants to be installed at market places for organic waste recycling</td>
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<tr>
<td><strong>5</strong> Feature of citizen participation - inclusion of areas in tracking system via requests or complaints</td>
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![IEI FMS Architecture](image)

- **GPS coordinates**
- **GPRS communication**
  - Vehicle data
  - Store and Import
  - Internet web browser

![How to Segregate Waste](image)
Key six areas of focus

1. Area based development
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6. E-services
E-governance and E-services

- **E-services in AMC**
  - Auto-DCR has been installed in AMC
  - NIC for HRMS
  - GIS app

- **E-governance modules implement in Amravati**
  - Property tax
  - Website
  - Complaint & redressal
  - Inward & outward
  - Birth & death
  - Market & license
  - Town planning
  - Citizen facilitation center
  - Marriage registration center
  - Accounts
Key initiatives recommended

1. 100% utility bill payments online.
2. 1 window licensing process for each department
3. Make website compliant (New Guidelines for Indian Government Website (GIGW) website)

G2G initiatives
4. Internal data sharing network linking all departments. Critical for single window clearance
5. Updating of project status, reports and comments on network

G2C initiatives
6. Citizen reward points system
7. Updating citizens about key city events and accomplishments via message alerts
8. Area wise message alerts for disaster management

Mobile app
9. Implementation of module for licensing process for all departments
10. Connecting Disaster management department and other allied department to app
11. Citizen complaints and grievance redressal module to ensure complaint resolution in under 24 Hrs
12. Integrating Health Care HMIS system with app for ease of access of medical records
Mobility, Utility, Payments and Information (MUPI) kiosks at 240 locations in Amravati

1. Bus terminal
2. Railway stations
3. Hospitals
4. Municipal parks/gardens

MUPI guide to help citizen solve their day to day problem and help experience the charisma of Amravati
Key requirements of having an SPV

1. Minimum shareholding of state govt. and ULB: 50%, maximum shareholding of private sector: 50%

2. Ring-fence operations in areas managed by the SPV (revenue proceeds to go under the SPV)

3. Help attract credible private players – including financial institutions

4. Provides Amravati Municipal Corporation the option of equity dilution in future (a ring fenced SPV can become a platform for private investment under PPP mode in future, can potentially issue bond)

5. Legally compliant structure to follow
Key topics to be covered as part of SCP

1. **Background** (City Profile, Best Practices to City’s context, Review all Policy, Plan, Scheme documents, Conceptualize how to transform the City into a Smart City & assess preparedness)

2. **SC Vision, Goals and Objectives** (connect each goal to strategic recommendations)

3. **City Potential & Capabilities** (operational efficiencies of the City in terms of project execution in past 3 years)

4. **Proposal Development** (Identify the areas where Smart Solution(s) are to be deployed, define project boundary, disaster resilience built in?, Is the project scalable to the entire city or to other cities?)
   - Area development (choose one area for retrofitting or redevelopment or Greenfield)
   - Pan-city solution (including the technological specifications)

5. **Final Citizens Consultations** (citizen engagement at multiple levels, revise proposal based on citizen feedback, contrary voices accommodated)

6. **Implementation Framework** (including establishment of city level SPVs, convergence with other plans)

7. **Financing Plan & Institutional Arrangements for Post Project Sustenance** (O&M and capex funding, innovative funding schemes, financial assumption, etc.)

8. **Project Phasing & Timeframe**

9. **Benefits & Impact Assessment**