Geospatial Technology for Urban Information & Management

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BE’n’KA Consulting
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1. Overview – Geospatial
2. Data Acquisition – Technology & Equipment
3. AP & Other States - India
4. AP Projects & Programs
5. Benefits
6. Case Study – Municipal Reforms Project
Urban Information & Management

The core function of a city to plan & to provide inhabitants a livable environment be it Housing, Transportation, Civic services, Roads, Education, Water & electricity, Sanitation & Solid waste Management, Disaster Mitigation & response, Safety & Surveillance, Emergency response System, Hospitals required for a healthy living and as per policy for Revenue generation for Governments to re-invest for providing good smart governance.
Our focus is today is to understand the role of Geospatial technology in Urban Information & Management.
Data Acquisition & Equipment

- Ground Survey
- DGPS
- Satellite
- Defense — Nishant
- ETS
- Drone — Slybird-India
- Backpack-DGPS
- LiDAR Mobile Car
Geospatial Technology includes distinct components that work together.

- GIS - Geographic Information System
- GPS - Global Positioning System
- RS - Remote Sensing
- Surveying
- WebGIS

Two major information database
Seamless single window integrations of ICT and Spatial technologies
Status of Geospatial Technology for Urban Information & Management - Major States of India

- **Andhra Pradesh** – Ongoing APMDP, AMRUT, DPMS – Comprehensive Approach
- **Bihar** – Base Map and GIS Database is in progress past 2 years
- **Karnataka** – e Aasthi as part of UPROR : Integration with ERP – For selective modules – property tax
- **Madhya Pradesh** – GIS base Maps project initiated for Geodatabase & Mapping
- **Maharashtra** – Initiated couple of months for Geodatabase & Mapping
- **Orissa** – Geodatabase and Mapping for Urban areas under Progress - No comprehensive approach
- **Rajasthan** – RajDhara – Initiated (Ongoing) – Comprehensive approach but just initiated couple of months back
- **Telangana** – Ongoing TMDP project – No comprehensive Approach
- **Uttar Pradesh** - Base Map preparation – No comprehensive approach
Orissa – One State One Data

GIS Projects

GIS Systems

Distributed Networks

Public(s) Services

Stand Alone

Coordinated

Cooperative

Cloud
Rajasthan e-Governance Architecture

1. Rajasthan State Data Centre & Network Operating Centre:
   - 100 mbps Dedicated Connectivity;
   - Hosting more than 500 Websites, Portals and Applications
2. Raj Megh - The Rajasthan Cloud:
   - End-to-end Cloud enablement on SaaS, PaaS basis for Rajasthan
3. Raj Net - The Rajasthan Network:
   - Seamless connectivity till Gram Panchayat Level through LAN/SWAN/Broadband/Over-The-Air/Satellite
4. Raj Dharaa - The Rajasthan GIS-DSS:
   - A seamless Geographic Information System for Rajasthan, shared by all Government Departments, Organizations and utilized for systematic decision support.
5. Raj Sewa Dwara - The Rajasthan Service Delivery Gateway:
   - Providing unique door of connectivity, unification and integration for all State, National and Private Applications/Gateways – The true Intelligent Middleware
6. Public Interface:
   1. Fully automated & mobile ready Solutions for
      - Public Interface (Bhamashah/eMitra/RajSampark)
      - Government officials
        - (HRMS/eOffice/IFMS/eProcurement/Ifacts)
      - Communication (eSanchara)
   2. Raj evault - Fully automated electronic verification, no need of hard copy documents/affidavits/notary attestation for service delivery
   3. RAAS (Rajasthan Accountability Assurance System) - End-to-End monitoring and accountability of government officials
   4. Mobile Apps for all Government portals & application on all platforms
7. Rajasthan Single Sign On and State Portal:
   - One Person, One Identity – With all mapped datasets and documents for every state resident
Smart Cities

Basic
- Ensuring basic services (particularly reticulation network)

Liveable
- Providing a more livable environment (cleaning, greening, safety, etc.)

Sustainable
- Ensuring sustainability and financial viability; and

Technology
- Using Geospatial Technology and eGovernance technologies to improve, efficiency, effectiveness and economy in the delivery of services.
Geospatial in Smart City

Enabler

Smart city

Infrastructure

GIS

Data

Urban planning

Transport planning and traffic management

Land management

Monitoring & evaluation

Roads

Construction mapping

Maintenance mapping

Cadastral

Water & electricity

Education & clinics

Utility Management

Property Management

Social Facilities

Governance

Strategy management

Effective urban management

Efficient service delivery

Effective leadership

Financial Management

Integrated service delivery

Citizen Information

Accountability

Decision Making

Policy formulation

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SAP /SCADA/ERP Integration for Public services: Smart Asset Management & Maintenance

Benefits

1. Visualize spatial relationships between assets, customers, employees, and service providers
2. Efficiently deploy mobile assets that deliver goods or services
3. Accurately quantify market potential and penetration
4. Monitor supply chain status
5. Quickly create intuitive and actionable map-based reports
Municipal Governance - Advantages

- Property Tax
- Water Charges
- Advertisement Tax
- Trade Licenses
- Land & Estate
- Employee Management
- File Management
- Legal Case Management
- Council Management
- Works Management
- Payroll & Pension
- Inventory
- Assets
- Grievance Redressal
- Building Plan Approval
- Birth & Death
- Marriage Registration
- Citizen Portal

City/State Dashboard
Open Source
Mobile Apps
GeoSpatial
Benefits - Urban GIS

1. Spatial data infrastructure created for **improved decision making**
2. Spatial data utilization for **improved planning** of civic infrastructure and services
3. Spatial analysis of all performance indicators for **improving performance**
4. **Grievance redressal mechanism** through smart maps and smart applications.
5. **Improved transparency** for citizen engagement
6. **Improved disaster management response**
7. Identify **at-risk or under-served** civic amenities within a community
8. **Improved management** of Municipal Resources & Assets
9. **Cost savings** by improved decision making
10. Supports **Master plan preparations** for the ULB’s.
11. Horizontal and Vertical **integration** of ULBs and other government departments
12. **Faster processing** of files and information resulting in **efficient working** of the Municipal administration
13. **Feedback analysis** through grievances
14. **Reducing the interdependency**
15. A **holistic** citizen centric approach
Andhra Pradesh – Geospatial Technology

Geospatial technology is playing a key role in various projects across AP State. Few to mention are:

1. Urban Planning and Implementation for Capital Region Development – CRDA
2. AMRUT Cities - Urban Master Plans for 32 towns in AP, Solid waste Management, Integrated Water Sector Approach and Mission Period Planning and other projects as per AMRUT guidelines
3. Andhra Pradesh Municipal Development Project (APMDP) for Urban Administration & Citizen Services
4. AGILE : GIS Portal for Industrial land Enquiry – APIIC
5. Disaster management for AP: Revenue Disaster Management, AP
6. Control & Eradication of Mosquito borne, water Borne and Viral diseases – Public Health Department, AP
7. Smart Cities
8. e Pragati
9. Land Hub
10. Transportation
11. Roads & Highways
12. e Health
13. Fiber Grid
14. Security & Surveillance & Other Sectors
Brief Case Study - APMDP

Scope

• High Resolution Satellite data (30 Cms)
• Ground Survey
• Base Map Preparation
• Updation of Revenue Database
• Rationalisation of House numbering
• Revenue Survey App
• Project Management Dash Board
• Spatial decision Support System (SDSS)
GCP’s & PBM – Ground Survey

Dimensions of the Permanent Bench Marks

Identification of PBMs in Ramachandrapuram ULB
Topographical Survey – ETS

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Updation of Revenue Database
GIS & e-Governance (MIS) Web GIS Portal with SDSS
Integration of ERP and GIS

GIS Base Maps
Integration with ERP
A Government of AP initiative under APMDP & e Governance Project.
(Supported by World Bank)

Field Data Capture/ updating
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GIS Based Spatial Analysis of MIS Data - Property Tax

Water Tax Arrear Demand: Rs 449,340
Water Tax Arrear Collection: Rs 187,085 (41.77%)
Water Tax Arrear Balance: Rs 261,255 (58.23%)

Property Tax Arrear Demand: Rs 540,507.5
Property Tax Arrear Collection: Rs 467,499.8 (86.48%)
Property Tax Arrear Balance: Rs 73,008.2 (13.52%)

Tax Paid Assessments: 746 (23.98%)
Tax Not Paid Assessments: 1903 (76.02%)

Property Tax Current Demand: Rs 535,774.0
Property Tax Current Collection: Rs 154,352.3 (28.81%)
Property Tax Current Balance: Rs 381,421.7 (71.19%)
GIS Based Spatial Analysis of MIS Data - Distribution of Revenue Information
GIS Based Spatial Analysis of MIS Data - Grievance Redressal
Thank you

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