USE OF GIS FOR ENHANCING PROPERTY TAX REVENUE

AMDA - National Workshop - Property Tax
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Some Conceptual clarity

- Globally properties have been assessed to tax with great accuracy for over hundreds years without using modern technology and long before computers were invented.

- Property Tax administrators must keep this in mind when deciding upscaling from manual recall of information to computerization.

- IT is not a substitution for assessment but only complements the effort.

- IT does not produce administrative skills-

- Greater spending on IT will not necessarily produce better results.
• However, a well-planned use of IT will reduce costs, increase accuracy and consistency of the data, and will certainly save time.

• Helps in analyzing large database in several different formats and detect non-compliance.

• India is most suitable for developing IT Based property tax administration as we have large IT engineers and even larger number of data operators.

• Several Municipalities have begun the process of computerizing property tax (the successes and the failures) an one can learn from their experience.

• Remember it is important to get the strategy right.
Why GIS for Property Tax?

- Efficiently administer property tax system
- Provides a standard toolbox for Tax Officers, Assessor, and Bill Collectors – ensuring uniformity across jurisdiction
- Access to property assessment and tax information in a timely, accurate, and cost effective manner
- Expandable to accommodate future changes in valuation.

Long Terms Goals for GIS

- Urban planning using digital data
- Identifying and categorizing urban land use
- Deriving property size and building density
- Planning road maintenance based on width and condition
- Determining the slope of the terrain for storm water drains.
Scope of GIS project for Property tax system

✓ To identify all properties in the BBMP area.

- To Assign **Unique Property Identification Number (PID)** to every property with their details in the BBMP Jurisdiction.

- Properties that are in the Tax net are corrected to have an accurate information (on its Site Dimensions, Built up area, Land Use and classification whether Owner occupied or Tenanted) to maximise the tax base.

- Prepare GIS framework for integrated and interconnected platform for all other services such as with Trade licenses, Grievances Redressal, Automated building Plan approval, Project Mgmt etc..
BBMP GIS PROCESS FOLLOWED.

- The GIS project was initiated to identify all properties that exist in the BBMP jurisdiction and bring them to the TAX Net with reference to:
  - The number of properties.
  - The approximate dimensions of the property.
  - The usage of the property.
- The process followed was to create a base map using satellite image and create a vector map (direction with coordinates).
- The vector map was used to conduct a field survey to correct and gather information about the properties.
- The corrected base map thus created was marked with the help centre boundaries and provided to the respective tax inspectors.
- This helped the TAX inspectors to understand the number of properties and update the status of tax payment.
2009-10

- The base map along with the associated register was used to update the tax paid application number. These updated register was used to update the GIS system to understand the tax paid status.
- Additionally corrections were made to the base map to validate the base map information as per the field information by the revenue dept.
- These corrections were incorporated into the base map.

2010-11

- Further survey was done to validate the information in the GIS system and also collect information pertaining to every property with regards to Assessment of properties.

2011-12

- To create a uniform numbering system for the entire BBMP area by issuing a unique property identification number (PID) in a systematic manner.
  - Assigning a unique street ID for every street within the BBMP zones.
  - Assigning a unique property number within each street.
  - Combine the ward number, street number and property number to assign a PID.
<table>
<thead>
<tr>
<th>Sl.No as per map</th>
<th>Plot/Bldg No. in the field</th>
<th>Approximate dimension</th>
<th>Building type</th>
<th>No. of Floors</th>
<th>Vacant</th>
<th>Resi</th>
<th>Comm.</th>
<th>Temple/Church/Mosque</th>
<th>Govt. office</th>
<th>School</th>
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</table>
GIS Identification of Properties

- Use the base map data to generate new maps and updating of system.

- Maps plotted as per help centres to the necessary resolution for easy identification.

- Maps will contain GIS Number along with identified plot numbers and select landmarks.

- The plotted maps along with a legend sheet to collect the following information will be submitted to respective help centres.
Identification Sheet Master:

- Gather Information and Mark Properties whose Taxes are Paid.

- Gather Information on Properties whose ownership information is available.

- Resurvey properties whose identity is not verified and collect data.
Updation of PID Numbers for properties
Map Showing Properties in a location
All Properties need to be assigned a Unique Property Identification (PID).

- PID number is a combination of Ward Number + street number + Plot no. 032-W024-256

**Streets:**
- Identify all streets within a Ward Boundary.
- Number the streets from West to East and Assign even numbers.
- Number the streets from North to south and assign Odd Numbers.

**Properties:**
- Assign Property numbers from north to South or West to East
- Assign Even Numbers to Properties on the left
- Assign Odd Numbers to properties on Right.
Updation of Properties

- Update data as Tax Paid and Tax not Paid.

- Additionally information on Properties that have been Assessed and properties that have not been assessed is also available.

- The Data availed and updated is used to generate the maps for the GIS Application.
Integration with Tax System

- The GIS System links to the Taxation System and can display property tax along with ownership information for a particular property.

- Property tax returns forms designed by BBMP. Hence helps integration
The system has scanned images of individual SAS forms.

The scanned images are then processed and data entry has been done. Tax paid has been imported from the Tax net application and a data base has been created for the scanned application.

Security for the data as well as users has been a key component in developing the system. The PDF files are encrypted and the application decrypts the data for viewing and printing.
<table>
<thead>
<tr>
<th>1) Year of Assessment</th>
<th>2008-09</th>
<th>P.I.D No.</th>
<th>6-19-2411</th>
</tr>
</thead>
<tbody>
<tr>
<td>2) Name of the Owner Smt</td>
<td>ARUN MA</td>
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<tr>
<td>Occupation: Service/Business/House Wife/Other*</td>
<td></td>
<td>Age*</td>
<td>Working/Retired*</td>
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<tr>
<td>Tel(R)</td>
<td>Tel (O)</td>
<td>Mob*</td>
<td></td>
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<tr>
<td>E-mail (* see below)</td>
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<tr>
<td>4) Address of the Property</td>
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<tr>
<td>Property No:</td>
<td>24</td>
<td>Name of the Road/Cross:</td>
<td>MAIN N MALLESWARAN</td>
</tr>
<tr>
<td>Street/Ward/Bloc No:</td>
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</tbody>
</table>
iPDF Features

Scanned images of all Tax paid application

Search functions using the following.

- Application Number,
- PID,
- Owner Name
- Property Number
- Street
- Stage
- Locality
- Built up area
- Site dimensions
- Number of floors
- Land Use
BBMP GIS Data
Detail of One Property
Property Summary Ward 99

**Municipal GIS for Bangalore Mahanagara Palike**

<table>
<thead>
<tr>
<th>Ward No</th>
<th>59</th>
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</table>

**PROPERTY SUMMARY**

<table>
<thead>
<tr>
<th>Type</th>
<th>Residential</th>
<th>Non Residential</th>
<th>Current Demand Assessed</th>
<th>Total Revenue 2003</th>
</tr>
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<tr>
<td></td>
<td>436</td>
<td>34</td>
<td>1327.0000</td>
<td>6193885</td>
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</table>

Type

Property_Id

Current Demand

Tax Net Paid After

Show details
Current Demand > Rs 10,000
Property Tax Paid
Benefits to the Users

- All tax, account, and parcel information is available within the same application – no redundancy or duplicate data entry
- Accessible anywhere, anytime via the Internet
- Photos, documents, and forms can be easily integrated with property records
- A history of all transactions will be maintained
- Contains integrated statistical and spatial analysis tools
- Flexibility with adhoc reporting
Integrated GIS System

Citizen Services
- Voter Registration
- Senior Citizen
- Resident welfare Assn.
- BSUP
- Education
- Solid waste management
- system Tracking

Building license
- Permits
- Inspections
- Historical Bldgs

Basic Land Data
- Land Records
- Tax Mapping
- Utility Mgmt.

Property Tax
- Billing and collection

Engineer & Horticulture
- SWM, Roads
- Footpaths, parks

- Owner
- Address
- Land usage/zoning
- Sales
- Property Value

Hospital
- Birth & Death
- Immunization programs

Trade license
Impact of these process resulted in numbers.....
## Number of properties as per GIS

<table>
<thead>
<tr>
<th>Zone</th>
<th>No of Properties</th>
</tr>
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<tbody>
<tr>
<td>YELAHANKA</td>
<td>148319</td>
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<tr>
<td>MAHADEVAPURA</td>
<td>243169</td>
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<tr>
<td>DASARAHALLI</td>
<td>77892</td>
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<tr>
<td>R R NAGAR</td>
<td>213501</td>
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<tr>
<td>BOMMANAHALLI</td>
<td>224284</td>
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<tr>
<td>SOUTH</td>
<td>243642</td>
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<tr>
<td>WEST</td>
<td>215850</td>
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<tr>
<td>EAST</td>
<td>252714</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>1619371</strong></td>
</tr>
</tbody>
</table>
Property Tax collections growth
(without any increase in the tax rate from 2008 till date)

<table>
<thead>
<tr>
<th>Financial year</th>
<th>Amount in crores</th>
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<tbody>
<tr>
<td>2008-09</td>
<td>625.6</td>
</tr>
<tr>
<td>2009-10</td>
<td>566.01</td>
</tr>
<tr>
<td>2010-11</td>
<td>1029.25</td>
</tr>
<tr>
<td>2011-12</td>
<td>1209.84</td>
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<tr>
<td>2012-13</td>
<td>1350.00</td>
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<td>2013-14</td>
<td>1340.00</td>
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<tr>
<td>2014-15</td>
<td>1012.00 (from Apr 1, 2014 to June 28, 2014)</td>
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</table>
Some of the issues encountered……

- Lack of motivation and commitment in the field staff
- The absence of effective monitoring system
- Lack of skill set in the staff
- Frequent changes in the staff deployed in field operations
- The staff has been assigned with other assignments diluting the intensity required
- Has to operate within the constraints of limited resources
THANK YOU