

Property Management System for Beawar Nagar Parishad

Introduction

Municipal bodies of the country are facing a peculiar situation where the demand for services has been rising due to urbanization and urban growth, but on the supply side, the local resource base has been constantly declining. Ineffective local governance, inefficient management practices, poor planning process, lack of periodical revision of municipal tax rates/user charges, poor information system and record management are some of the basic weaknesses in the present municipal administration system. Many municipalities in India, particularly those belonging to small and medium size cities are poorly staffed, that the staff responsibilities are unclear and often fragmented, the resources at their command which are scarce to begin with, are not put to efficient use and are in a sense wasted.

Thus the financial requirements for bridging the existing gaps and meeting the increasing demand for basic services are quite large. But there is hardly any awareness and sensitivity towards the financial dimensions involved in providing and managing even the minimum basic level of services. The net result is deprivation of substantial proportion of urban population from core urban services such as water supply, sanitation, primary health, street lighting, primary education, etc. This has led to marked deterioration in the standard and quality of life of urban residents.

The fiscal domain of municipal governments in India consists of large array of tax and non-tax sources of revenue. They also receive funds from the State Government in the form of grants-in-aid as also share in taxes collected by the State Government. The various sources of tax, non-tax and transfer revenue are given in Table 1.5.

Table 1.5
Major Sources of Income for Municipal Bodies in India

| Sources | Major Components |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <u>Internal/own Sources</u> Tax Revenue | Property taxes; tax on vehicles, animals, trade and callings and professions; theater tax/show tax; tax on advertisements, etc. |
| Non-Tax Revenue | Rents from municipal assets; income from municipal undertakings; user charges; fee and fines; income from municipal investments; etc. |
| <u>External Sources</u> Grants- in-aid | General purpose; specific purpose; grants in lieu of taxes |
| Shared Taxes | Entertainment tax; motor vehicle tax; land revenue; stamp duties; profession tax; etc. |

From the view point of financial autonomy, it is desirable that own sources should be the major sources of revenue for ULBs and dependency on higher levels of governments may be as low as possible. What is worse, many urban local bodies have accumulated huge debts and are facing serious problems in even servicing their debt. This has serious repercussions on the availability and quality of urban basic services in urban areas of the country.

About Beawar Nagar Parishad

Beawar is a town and a Municipality in Ajmer district in the State of Rajasthan. The city was founded by Colonel Dixon in 1835 as a military cantonment, at an important location between Jaipur, Jodhpur and Udaipur. It was named after a local village called Beawar Khas by the British. It is located at 184 kilometres southwest of the state capital Jaipur, amidst Aravali hill and along the National Highway No.8. As of 2011 India census, Beawar has a population of 1,45,809. Beawar is developing fast due to its locational advantage and its proximity to the Delhi – Mumbai Industrial Corridor which are reflected in rapid growth of the town. It is soon to become a district.



Beawar Nagar Parishad was formed by the state government of Rajasthan as a Local Governing Body in order to develop community and civic infrastructural facilities in the town. The Nagar Parishad caters to all the developmental works and essential facilities including maintenance of roads, bridges, drainage networks, maintenance of public places and parks, etc. The Nagar Parishad which is the statutorily responsible for the provision and maintenance of basic infrastructure and services in the town, like any other Municipal body, is experiencing tremendous fiscal stress even to operate and maintain the existing services at satisfactory levels, let alone augment them. While their responsibility to meet the growing demand to maintain existing services at satisfactory level is increasing rapidly, there is no commensurate increase in their revenue base, which has in fact been depleting constantly. Faced with such a situation, Nagar Parishad is gradually heading along the general trend of the urban local bodies which are becoming increasingly dependent on higher levels of government for their operation and maintenance requirements.

Project: Collection of Municipal Revenue through Property Tax Management System and E-Governance

Problem:

The Nagar Parishad needs to maintain a large number of records for their functioning which involves Land records, Cadastral Maps, Lease records, Property Allotment records, Master Plans, Encroachment records, road and drainage maps. There are large numbers of documents which are difficult/ cumbersome to look, search and manage. Most of the work is being carried out manually. So far, collection of Property Tax is also done manually which has led to poor Tax collection over the years as regular updation and validation has not been possible due to rapid growth and lack of resources in Nagar Parishad. In absence of any financial Accounting System, it is difficult to manage the finances and there is no process of knowing, how much Property Tax/ lease money is pending. There is also no means to check the misappropriation and fraud in real estate deals in the town. To check all these problems, **Property Tax Management System** aims at assisting Nagar Parishad for reducing the Defaulters List and deficit in Property Tax collection.

Objective:

The objective of the project is to develop an IT (GIS) based system to enhance, municipal taxation (especially the property tax) and management functions, and planning and management of day-to-day operations. The above system will be: Web based, Interface/ interlink with other e-governance and accounting software's and which should be upgradeable in future. Specific objectives of the study are:

- **Strategic Objectives:** To facilitate Implementation of a GIS based system
- **Operational objectives:** To facilitate:
 - Operation, maintenance and management of the GIS based property tax reform system
 - Tracking customer information and status on payments of municipal taxes and rates

Benefits to Nagar Parishad:

- a. The project enforced will enhance Nagar Parishad capacity and strengthen institutional capacity to deliver sustainable access to effective services for the urban population.
- b. More responsive, accountable and inclusive service delivery by the Nagar Parishad directly and indirectly of the State Government.
- c. Strengthened community participation in Urban e-Governance with improved infrastructure and regularly updated applications providing better access to services.

- d. Geo referenced Maps, digitized cadastral records, revenue maps, ward boundaries and other cartographic data for all specialized services of Nagar Parishad
- e. GIS Mapping of town which will be helpful for Nagar Parishad in slum up gradation projects under RAY and IHSDP schemes.
- f. Better way of identification of vacant land pockets, government lands, etc. Nagar Parishad will then be able to do better planning of various schemes on vacant land parcels.
- g. Better billing of water connections and electric connections in domestic and commercial properties.
- h. Better Revenue record management and Property Tax generation with regular updation of the Tax collection, which is the ultimate goal of this project.

Scope of Work:

An outline structure of the project shall include:

- Mapping of all the properties in an urban area from High resolution satellite images.
- Taking the maps in the field and taking the details of the property owners and property
- Linking the map data to the field consumer data.
- Property tax assessment, as per the consumer data.
- Online Property Management system integrated with the Payment gateway.

The Outline structure forms the basis for defining the scope of work which can be divided into three broad activities:

1. **Activity-I:** The first activity will be generation of detailed large scale maps consisting of the planimetric details, cadastral boundaries, micro level land-use and utility services using the state-of-the-art technology of GPS, image processing and digital data capture using IKONOS 1m/QUICKBIRD 0.6m resolution pan Sharpened colour imagery (or any better resolution image) supplemented by the ground truth collection, and conducting household surveys for collection of attributes of property tax.
2. **Activity-II:** The second activity includes producing property maps and develops GIS applications with due linkages to Municipal Information System to provide an improved information base for municipal decision related to property tax. This stage is focused on property mapping and development of GIS. Work will be done in close coordination with Nagar Parishad staff to carry out property mapping (as per Zones or whole town) and to ensure long term sustainable improvement in Nagar Parishad record keeping through upgrading skills in, and systems for, storage and collection of information on properties and for development of GIS applications.

3. **Activity-III:** The third activity includes implementation of the bill generation, distribution and collection for the first cycle and testing the system (preferably to an efficiency of 95%)

a. Expected Deliverables & Outcomes

Reports

- (i) Inception Report
- (ii) Geo- referenced base map showing properties and key physical features based on latest satellite data and GIS technology
- (iii) Integrated Database (capable of being fully integrated with the Municipal GIS Application) of all properties, Revenue data and other attributes as decided by Nagar Parishad.
- (iv) Comprehensive and updated data on Property Tax, Water Connections and on-plot sanitation for all properties taxable under the Nagar Parishad.
- (v) Verification/ reconciliation of data collected with existing Nagar Parishad records if any, Revenue records and water tax records.

(vi) Data Collation and creation of records for each property.

Nagar Parishad shall be taught to use the IT enabled application, upgrade data and use the same for Tax Collection, Network distributions, street lighting, new planning schemes, and various such operations under Nagar Parishad functioning

(vii) **Final Report** covering the documentation on the results of the installation and testing of software and improvements required along with potentials, constraints and limitations. This report shall also contain various training tools and materials along with user guide and training manual to the GIS Cell and an action plan for regular up gradation and management.

(viii) **Quarterly Reports.**

b. Expected Deliverables & Outcomes as Maps

By the completion of task the Nagar Parishad would have a detailed set of Reports as described above and a comprehensive set of Maps in the form of hardcopy as well as softcopy as described below:

- Updated map and records showing Properties with assessment numbers/ house numbers on a scale of 1:1000/1:600 for various Zones/ Municipal Limit of Nagar Parishad.

- Base map of the town to a scale of 1:1000/1:600 (soft copy) for the total town area in DXF/DWG format which shall contain foot prints of each building, roads and nalas duly incorporating cadastral information, locality, ward, block and Nagar Parishad boundaries with contour information at 20 meter interval.
- Proper grid and projection shall be designed for the whole of the town. This is essential for proper representation of graphical data and location related unique IDs for each property, which shall form part of GIS for the spatial analysis. In the case of digitization, the data is checked for dimensional accuracy, completeness, displacement, edge matching, symbology, and layering. All undershoots/overshoots; dangling vertices shall get removed in the process. The method to be adopted for digitization shall confirm the standards prescribed by Survey of India.
- The accuracy standards for the final base map shall be as below:

| | |
|-------------------------------------|---------------------|
| Minimum mappable unit on Maps | -- 1 mm on scale |
| Location accuracy in GIS | -- 1 mm on scale |
| Minimum spatial unit in GIS | -- 2 mm on scale |
| Registration Error threshold in GIS | -- 0.25 mm on scale |
| Coordinate movement/Weed tolerance | -- 0.25 mm on scale |

c. Application Development

- Development of GIS applications duly integrating with Municipal Information System.
- Billing Application
- A system in place for storage, use and upkeep of records

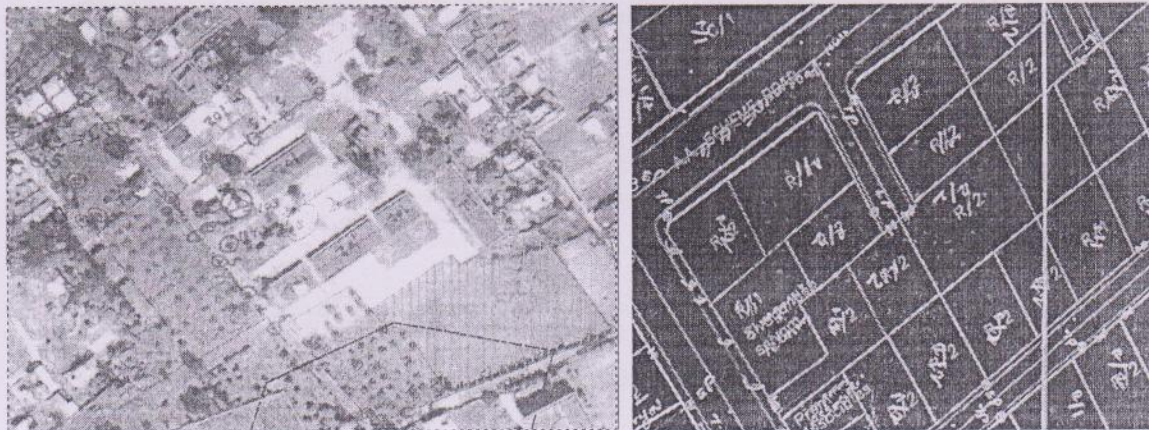
d. Training

- A training needs assessment report for senior and field staff
- Conducting in-house training
On the completion of the training a report will be submitted to the NAGAR PARISHAD Commissioner containing the following information.
 - i) The name, designation and gender of each participant.
 - ii) The expectation and evaluation forms submitted by each participant - which shall be based upon those prepared for use in NAGAR PARISHAD.
 - iii) An analysis of the expectation and evaluation forms. In the event that the analysis of these forms reflects an unsatisfactory evaluation from the participants, the Commissioner will request that the training materials be revised and / or the training be undertaken again.
- Maintenance of software and hardware (Post Implementation Support)

- Usage of GIS Applications- Assistance to NAGAR PARISHAD Staff (Post Implementation Support)



Polygonal features – properties, landuse, and linear features road network will be created from the satellite images.



Field Survey & Verification- Spatial and Attribute Data Update.

Stage wise Distribution of Deliverables:

| S.No. | Report | Time Period | No. of Copies, Type & Language | Contents |
|-------|--------------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Inception Report | 6 Weeks | Hard Copy- 1 Each in English and Hindi | <ul style="list-style-type: none"> Brief of Existing Situation Collection of Various Maps Procurement of latest Satellite Data Design of unique IDs for each Plot/ Property Identification of Zones/ Wards for work scheduling Revision of Timelines and activities after Work area delineation Training Methods and program QA Methods & Program Finalizing of Survey Questionnaire and Survey Method. Database Design for GIS Mapping Record of Meetings at Nagar Palika |
| 2 | Completion of 50% of GIS Map layers of the Town | 12 Weeks | <ul style="list-style-type: none"> Satellite Data in Digital Form Base Map & Property Map in Soft and Hard copies | <ul style="list-style-type: none"> Processing of Satellite Data for Map Generation Delivery of GIS Map Layers of 50% of Town |
| 3 | Progress Report-1 | 20 Weeks | Hard Copy- 1 Each in English and Hindi Digital Copy of GIS Map linked with Survey attributes | <ul style="list-style-type: none"> 50% Survey Data Linking with GIS Map Summary of findings based on completed surveys Institutional Setup for operation of Database proposed and finalized Commencement of Staff Training QA Report |
| 4 | Completion of 100% of GIS Map layers of the Town | 24 Weeks | <ul style="list-style-type: none"> Complete Satellite Data in Digital Form Base Map & Property Map in Soft and Hard copies | <ul style="list-style-type: none"> Processing of Satellite Data for Map Generation Delivery of GIS Map Layers of 100% of Town |
| 5 | Report-2: Analysis of Revenue Records | 36 Weeks | Hard Copy- 1 Each in English and Hindi Digital Copy of GIS Map linked with Survey attributes | <ul style="list-style-type: none"> Analysis of Rrevenue Tax Records Listing of Defaulters, Exceptions, Listing and Marking of New Property's Analysis of Tax Records to calculate future revenue tax to be collected. Draft Reports shall be submitted after percentage completions |
| 6 | Draft Final report | 41 Weeks | Hard Copy- 1 Each in English and Hindi Digital Copy of GIS Map linked with Survey attributes Completed in all respect | <ul style="list-style-type: none"> 100% Survey and Data Entry completed Full findings of Survey Results of Verification and Reconciliation Record and report of Staff Training Completion of Records for each property |
| 7 | Final report | 45 Weeks | Hard Copy- 2 Each in English and Hindi 2 Prints & Digital Copy of GIS Map linked with Survey attributes 2 Prints & Original Satelite Data | <ul style="list-style-type: none"> Geo-referenced Base Map linked with property survey in GIS All deleverables of the project as predefined. |

Payment Schedule:

| S.No. | Milestone Linked Payments | % Total |
|-------|-------------------------------------|------------|
| 1 | Inception Report | 10 |
| 2 | Completion of 50% of GIS Map layers | 10 |
| 3 | Progress Report-1 | 20 |
| 4 | Completion of 100% of GIS Map | 30 |
| 5 | Report-2: Analysis of Revenue | 10 |
| 6 | Draft Final report | 15 |
| 7 | Final report | 5 |
| | TOTAL | 100 |