



Digital Inclusion award 2012

Geospatial Excellence Award 2009

A paper was presented at *"Map World Forum 2009"*, organized at Hyderabad in which the project was awarded *Geospatial Excellence Award 2009 for " Geospatial Application for Decision Support System in Local Government."*



KANPUR MUNICIPAL CORPORATION

AWARDS

A Poster Presentation has been Awarded in "ESRI India User Conference 2009-10" at New Delhi

GIS enabled and forms a Spatial decision support system in a local government. The system has resulted in enhancing the property based tax revenues by three times as compared to the system that existed prior to the introduction of the GIS based application. The other positive fallouts of this Endeavour have been:

- Transparency in governance
- Reduction in delays in government processing of grievances
- Online tax payment and status verification facility removes intermediary agents facilitating the same.
- Better revenues for investments into civic facilities



Property Survey & GIS database Creation

Quickbird satellite data was processed and geo-referenced based on the ground survey to collect the GCP's through DGPS. Base data of 1:1000 scale was created through digitization of satellite imagery and supplemented with secondary ground survey to capture information on covered / carpet area, land use, occupant's details, condition of structure, etc. The mapping done using the Quick bird Satellite data was used for conducting the primary contact property survey.

Introduction:

Kanpur Municipal Corporation (KMC) is one of the largest commercial and industrial Municipal Corporation in Uttar Pradesh, India extended to a total area of about 260 Sq. KM with a population of about 2.5 Million people 2001 census). KMC is using ESRI software ArcSDE, ArcView since year 2002. We had a (total station) digital map of Kanpur City and the map was integrated with other property tax related attribute data in the desktop platform. In year 2006 the KMC decided to update the digital maps with the help of Quick Bird imagery, updation of different ESRI soft wares along with development of a GIS based interactive website and on-line property tax information and tax payment system.

Property Tax Application and Web site Development
The software development effort for the Kanpur Municipal Corporation included development of KMC portal and property tax application.

An Over View of the Project:

As a part of the e-governance initiatives, KMC envisaged development of an online web & GIS based property tax calculation information & payment system as a pioneering effort in the country. The job was formally tendered and the work was awarded to ESRI India on basis of best technical cum financial performance. The scope of this work covered the following are the major activities:-

- Creation of a GIS based spatial property database involving:
 - Procurement of 0.6m resolution KMC jurisdiction
 - Geo-rectification of the GCPs collected
 - Updation of the help of geo preparation of the
- Conduct a property unit
- Development of on-line GIS system for on-line payment
- Development of database repository
- Supply and install networking with server
- Training of KMC staff
- Remembering of property and fixing of house

The Scope of work categorized into two requirements of the

- Property Survey &
- Application Development

A property tax application has been developed providing a GIS interface to perform conditional queries on database such as 'Tax collected by Zone' or 'Tax collected in a financial year for a selected ward', etc. The database is linked to spatial layers to display results of analysis and queries on GIS maps. The application also enables the KMC staff to calculate tax based on digitized areas taking into account the Unit Area Method and generate various kinds of MIS reports required in the day to day operations of KMC. Primary focus of the application was to provide a server based Geographical Information System with key spatial layers and links to the relevant textual / graphical information available in the database.

management system, a proper addressing system is a prerequisite for efficient management of many of the public services, considering the complexity of the Indian metropolitan house pattern it is very difficult to find out full proof numbering system. However with application of modern tools like GIS it has become easy to design a logical and consistent numbering system. Considering the actual scenarios in Kanpur, the numbering system which is practical for Kanpur will be an administrative boundary based numbering system. In this system, the house number or premise number is unique within the smallest administrative boundary that is Chak/block in the case of Kanpur.



KMC GIS Based Website
An interactive GIS based website was developed for KMC to provide on-line information to citizens on

- Property Tax Details
 - a. Property Tax liabilities
 - b. Existing status of paid taxes
 - c. Annual taxes due to be paid.
- On-line Property tax calculation based on the Unit Area Method and On-line tax payment

A facility to access maps based on Zones, Wards, Blocks and Chaks will be provided. In case an individual or an organization wishes to buy relevant maps, the site also provides for visualization of maps and placing an on-line purchase request by the individual or organization.

Online tax payment
Some special features of the website to provide on-line information to citizens on

- Transaction failure redressal
- Automatic receipt generation
- Automatic data updation based on time specific scheduler

Software & Methodology Followed by KMC
KMC application uses the three-tier architecture based on ESRI technology. An ArcSDE service conveys spatial data between Geographic Information System (GIS) applications and a database. The system architecture uses database management systems (RDBMS) - SQL Server with ArcSDE. It is a registered collection of ArcGIS feature classes. The application that connects to and access spatial data from an ArcSDE service will be automatically designed in the application. The solution component for KMC application development and deployment follows three-tiered system architecture as given below:

- Presentation Tier or Client Tier where the users access the KMC application through internet browser.
- Application Tier where the KMC application business logic resides
- Data Tier where the KMC application databases reside

Time Frame:
Initially it was one year but it was extended i.e. it took 3 years to complete.



Financial Benefits Account

Year	Property Tax Enhancement After GIS Project	Property Tax Enhancement Before GIS Project
2006	100.00	100.00
2007	150.00	100.00
2008	200.00	100.00
2009	250.00	100.00
2010	300.00	100.00
2011	350.00	100.00
2012	400.00	100.00
2013	450.00	100.00
2014	500.00	100.00
2015	550.00	100.00
2016	600.00	100.00
2017	650.00	100.00
2018	700.00	100.00
2019	750.00	100.00
2020	800.00	100.00
2021	850.00	100.00
2022	900.00	100.00
2023	950.00	100.00
2024	1000.00	100.00
2025	1050.00	100.00
2026	1100.00	100.00
2027	1150.00	100.00
2028	1200.00	100.00
2029	1250.00	100.00
2030	1300.00	100.00

Operational Experiences of KMC GIS Project

Public Awareness Campaigns to Educate the Taxpayer

Property Tax Reform Intense Discussion in the Kanpur Municipal Corporation Board

Property Tax Reform Talk of the City

KMC Core GIS Team

U.S. Desai
Additional Municipal Commissioner & Team Leader

Faraz Khan
GIS Coordinator

Krishna Bharat Mishra
GIS Assistant

ESRI
With technical support of our partner NIIT GIS Lab, New Delhi
Consultant & Developer

USE OF KMC GIS -MAPS

Digital Map uses in -

- By Kanpur Municipal Corporation (KMC) for planning and revenue generation.
- Delimitation of KMC Wards
- Ward wise Backward Population Survey
- BPL (Below Poverty Line) Survey
- For planning, design/implementation of water supply & sewerage projects under JNNURM.
- By Kanpur Electric supply Company (KESCO) for power distribution planning and revenue generation.

WE REMEMBER THEM & ARE THANK FULL TO

- The TRAINING faculty of IIPA New Delhi and specially Mr.G.Sriraman initiate the concept.
- Ex-Municipal commissioners- Mr.Arvind Singh for conceptualization , Mr.Badal Chatterji for selecting a confident partner, Mr.M.P. Mishra & Mr. P.K.Pandey
- Mr. Mukund Rao, President, NIIT-GIS for successful execution.

Project Implementation was A hurdle race
As usual change is always painful till it is accepted, else till it becomes a habit. A strong management support from KMC and ESRI has been proved to be the key to win this hurdle race.

We have learnt that

- Continuous stepwise consultation/participation with various stakeholders
- Awareness of Taxpayers
- Political/Administrative will
- Media Support

..... is very much needed for successful implementation of this Project.

Project Challenges
Property addressing is one of the most important components in property management systems. A proper addressing system is a prerequisite for efficient management of many of the public services, considering the complexity of the Indian metropolitan house pattern it will be very difficult to find out full proof numbering system. However with application of modern tools like GIS it has become easy to design a logical and consistent numbering system.

Considering the actual scenarios in Kanpur, the numbering system which is practical for Kanpur will be an administrative boundary based numbering system. In this system, the house number or premise number is unique within the smallest administrative boundary that is Chak/block in the case of Kanpur.

Structure of the property number
The house property number has 6 components i.e. Zone No., Ward No., Chak No., Premise No. There are 4 digits in the number.

Part	Description
1	Zone Number
2	Ward Number
3	Chak Number
4	Premise Number

The Tax Payers consultation participation
One month time was given for self assessment by filing date to property owners. Objections were resolved by property owners after publishing date. Objections were disposed off.

Experiences of KMC GIS Project
During the Project:

- The project faced strong opposition from the grass root level workers to senior officers of the corporation itself, as it exposed the gap and revenue sharing links.
- The change in the tax level directly affected the property owners whether Government or private which led to many litigations in the local court as well as Honorable High Court.
- The issue of tax revision was grabbed by the political parties and a big hue and cry was made in the parliament chambers till it was signed by the Government.
- The details of the whole project, used in the project, mobility, transparency in the system, use of GIS and other technologies, the public interface, revenue generation details and the governance induced system to be applied in the project was explained to the Government through various forums.
- It was discussed in detail at every level to clarify the confusion created about the project.
- To ensure the quality of the data base line (Historical field verification was done.
- This tax revision was made after 21 years, it resulted into a huge field income in the tax amount from three times to ten times. The major reasons were because of the increase in land use rates and address/structure of the building on the change of the use of the property (from residential to non-residential or industry).
- Utilizing the accessibility factor the land use base rates were substantially reduced.
- The revenue reduced system was discontinued in six Zonal offices under the supervision of Deputy Municipal Commissioner to start later decision. This system was closed through the year.

After the Project:
System has been finalized completely.

- Litigation in the courts has been decided in favor.
- Everyone is happy because the collection is three times than the previous year.

AWARDS

“The Indian Geospatial Award 2009”, delivered by Sri T.Ramaswamy, Secretary Department of Science & Technology, Govt. of India, New Delhi. Kanpur Municipal Corporation has been awarded for Utilizing Geospatial Technologies as part of e-Governance initiatives. The Award recognizes the effort in Successful Implementation of Technology, resulting in better revenue. generation..



AWARDS

A paper based on this project has been submitted at **“ICT for INDIA Award”** organized by **SKOCH Group** which the project was awarded for **“ICT for INDIA Award, 2010”** for enhancing the property tax based tax revenue by three times by providing for transparency in governance, on-line tax payment. By **Honorable Minister of Urban Development, Govt. of India Sri. Jaipal Reddy**, dated 22th September, 2010 at New Delhi.



KANPUR MUNICIPAL CORPORATION

SKOCH "ICT FOR INDIA AWARDS 2010"



KANPUR MUNICIPAL CORPORATION

KNN has been selected under *The Top-100 ICT Projects in INDIA during 2011* & Awarded certificate of Merit for Unique Property Numbering System dated 1st Sept., 2011



CSI-Nihilent Award-2011

Project has been awarded CSI-Nihilent Award-2011 in the project category G2C, delivered by **Computer Society of India dated 02.12.2011 at Ahmedabad.**



U.P. State e-Governance Awards-2009-10

Project has been awarded U.P. State e-Governance Awards-2009-10 in the project category "Government Process Re-engineering" delivered by Sri Anoop Mishra, Chief Secretary Govt. of Uttar Pradesh dated 07.12.2011 at Lucknow.



Special Achievement in GIS in India (SAG Award) Award

Project has been awarded Special Achievement in GIS in India (SAG Award) Award delivered by Sri Sailesh Nayar, Secretary Science & Earth, Govt. of India dated 08.12.2011 at 12th ESRI India User's Conference, New Delhi.

