

Better Land Management, Improved Operational Efficiency, and Ease of Citizen Interaction through IGis



SRIT Case Study

Client

Surat Municipal Corporation (SMC)

Website

<http://gis.suratmunicipal.org/>

Location

Surat, Gujarat

Industry

Government

Organizational Profile

Surat Municipal Corporation is a local self-government that has come into being under the Bombay Provincial Municipal Act, 1949. It carries out all the obligatory functions and discretionary functions entrusted by the BPMC Act, 1949 to make Surat a dynamic, vibrant, beautiful, self-reliant, and sustainable city with all basic amenities, to provide a better quality of life to the citizens of Surat.

Solution

Web GIS on IGis - An Integrated GIS and Image Processing Platform

Project Summary

The main objective of this project was to develop a comprehensive web-based GIS application for SMC for planning, management, and governance of its entire functioning. The solution was implemented by SRIT OEM on their indigenous integrated GIS and Image Processing platform, IGis. A comprehensive GIS base map was created using HRSI (High-resolution satellite Imagery) comprising important layers like household level property data, road network, utility systems like water supply, sewage, storm water, etc. A customized web-based GIS application was deployed for various departments of SMC for them to use spatial information in planning, operation, decision support, and citizen engagement.

Solution

As part of the overall solution SGL designed the Data Model, carried out required field survey, and Base Map Creation. Base Map for SMC area of 327 sq. KM was prepared, using 0.6 m Satellite Image at 1:5000 scale. A slum survey using DGPS/Total Station was carried out to create a slum map at a 1:500 scale. The base map comprised about 110 layers including layers for town planning, property tax, town development, Road & Transports, solid waste management, utilities, etc. A customized web GIS application was developed for SMC departments to help them use Geo-spatial data effectively in their respective functions. Training to departmental users and post-implementation support for three years for enterprise GIS setup was also provided as a part of the project. Some of the Geo-enabled web application helping SMC administration in improved governance and city services include:

1. Property Tax System

Map view of all Geo-tagged properties along with information like Owner name, usage, property type, self/tenant, assessment area, outstanding tax amount if any etc. GIS system integration with Property tax system to pull the real time data. Analysis and planning of tax recovery zone/ward wise to improve tax collection.

2. Land Information System

View and analysis around

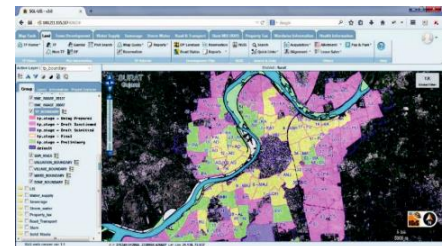
- TP and Development Plan details
- Plot Information
- Part-print generation
- Form B/F report generation
- Reservation details
- Land use details





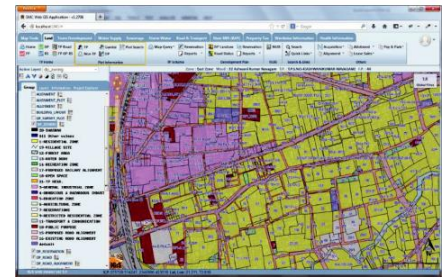
3. Road & Transport module

- Map view of road infrastructure and road assets
- Separate layers for Road, Bridge, Street Light, Road Divider, Traffic Island, Traffic Signal, etc.
- Spatial Analysis and reporting using attributes are like road length & width, road type, road construction/ carpeting information etc.
- Spatial Analysis and reporting on street light based on attribute like pole type, cable type, pole no., erection date etc.
- Sub module for bridge with GIS analysis based on bridge type (river / flyover / creek / etc.), length, width, no of span, construction date, design consultant, PMC, TPI agency etc.



4. Water Module & Sewerage Network

- Map view of entire water network including pipeline network, valve, junction, ESR, UGSR, WDS, WTP.
- Network monitoring, tracing and operation based on attributes like pipeline type, diameter, depth, position from road centre and edge, water supply time, supply area.
- Geo-enabled planning based on WTP information like installed capacity, raw water quantity, treated water quantity, etc.
- Map view and network analysis capability for entire sewerage network consisting of layers like pipeline network, manhole, STP, SPS, TTP, etc.



5. Building Permission & BUC Integration

- Geo-tagging and uploading of building plan for each of the application.
- Integration with building permission system for Status Monitoring of each for each application and issuing the building permission certificate.
- Issuing of BU permission once entire data is integrated in GIS.

6. Slum MIS

- IS mapping of slum along with socioeconomic data as per RAY guidelines
- Spatial analysis and reporting based on requirement.



Exhibit 1 (2006) - HRSI (0.5m) IKONOS of SMC Area

7. Citizen Interface

- Plot Search, Form B/F Report, Part-print generation
- Building permission details: Project details, Technical details, Building details, Online payment of Property tax, COP and parking area, BUC details

Benefits from the Solution

- GIS based property tagging helped to identify unassessed properties, resulting into property tax collection increase from INR. 596 cr. to INR. 717 cr. (~20% rise).
- Helped in identifying the aging lines having frequent leakages and contamination. Such lines were replaced.
- At a glance information of all public purpose plots demarcated for various purposes.
- Helped in identifying the utility lines and their quantum for shifting in case of conversion to cement concrete road and major projects like Flyover Bridge, metro, etc.
- Creation of knowledge repository for various utilities eliminating the risk of knowledge specific to one or group of individuals.
- Useful in identifying the site location for the creation of a new civic facility like a community hall, reading room, swimming pool, etc.
- Citizens can check the development permissions and legality and ownership before purchase.
- Citizens can obtain the TP Scheme Part Plan and all the details of land like area, zoning, etc. on their own which reduced their trip to SMC offices.
- Helps to bring transparency and move towards open data-open government



Exhibit 2 (2012) - HRSI (0.4) WorldView II of SMC Area

SRIT

Established in 1999 | CMMi Level 5
 ISO 20000-1:2018 | ISO 27001:2015
 ISO 9001:2015 | ISO 14001:2015

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