

Development of Geo Info Systems for Bangalore (BGS)

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ABSTRACT

It is a set of geo information tools like Bangalore Geo Info Tool (BGT), and Bangalore Cadastral Info Tool (BCIT) with number of applications designed to manage urban areas efficiently based on remote sensing and Geographic Information System (GIS). Long-term goals of the BGS are towards the development of a comprehensive urban information system to address issues related to city planning and development, transportation system, civic amenities (schools, hospitals, shopping centers etc,) property tax collection, and managing the utilities (water supply, sewerage system, telephone system and power).

Bangalore Geo Information Tool (BGT): This tool will act as a guide for the visitors, locals, and various civic/government authorities to locate the various facilities or assets. It acts as a base for the future (GIS) applications development. This system provides information about the city. The BGT presents free, up-to-date, interactive information in a visual format. The service includes five primary information - transport, sightseeing, food and drink (shopping), industries (mainly IT).

Bangalore Cadastral Information Tool (BCIT): This tool will act as a guide for the landowners, lawyers, surveyors, valuer's, real estate managers, locals, and various civic/government authorities to locate the various facilities or assets. It acts as a base for the future multipurpose cadastral Information System and other GIS applications. Cadastre is the principal source of information about ownership of the land. The basic unit of the cadastre is the land parcel-Plot. The paper discusses about the development of Geo Info Systems (BGS) undertaken for parts of Bangalore using remote sensing and GIS.

Development of Geo Info Systems for Bangalore (BGS)

1. INTRODUCTION

Bangalore is the capital city of the state of Karnataka and the economic and real estate pressures that it faces; the setting up of a systematic land information system is very important for the city of Bangalore. The land records of Bangalore created between 1880 and 1920 were updated only occasionally. It is thus totally obsolete today and covers little more than 20% of the urbanized area. The amelioration of the quality of the cadastre in its current form as well as the evaluation process of potential assets and the implementation of the tax system (optimization of tax collection) is an indispensable condition for the success of the envisaged projects.

In fact, the updating of town planning documents for the city of Bangalore will necessitate the mobilization of massive urban data to foresee and gauge the necessary developments: Services, transports, road network etc. The revision and development of the existing cadastre leads to:

- Creation of Proper property rights information (cadastral data)
- Census of the built-up areas(in terms of landuse, architectural and urban forms)
- Create a base for the local tax policy
- Optimize the collection of tax

GIS and Remote Sensing technology have capability to provide necessary physical input and intelligence for preparation of base maps, formulation of planning proposals and act as monitoring tool during implementation phase. Satellite imageries help to maintain truthful record of terrain during that period. Thus GIS and Remote Sensing are emerging as a powerful land related technologies for monitoring and management of land. Thus GIS and Remote Sensing has capability to provide FOURTH dimension to the city i.e. - **TIME**

2. BACKGROUND

BANGALORE GEOINFORMATION SYSTEM (BGS)

It is a set of geo information tools (Bangalore Geo Info Tool, BGT, Bangalore Cadastral Information Tool-BCIT) with number of applications designed to manage urban areas efficiently; this is based on the Geographic Information System (GIS). Long-term goals of the BGS are towards the development of a comprehensive urban information system to address the issues of:

- City planning and development
- Transportation system and traffic management
- Planning and development of civic amenities-Schools, Hospitals, Shopping centres etc
- Property tax collection and urban development fund generation
- Planning, development and managing the utilities-water supply, sewerage system, telephone system and power.

3. BANGALORE GEO INFORMATION TOOL (BGT)

The Bangalore Geo Information Tool (BGT) is part of the Bangalore Geo Information System (BGS). This tool will act as a guide for the visitors, locals, and various civic/government authorities to locate the various facilities or assets. It acts as a base for the future (GIS) applications development.

BGT provides information about the city. The BGT presents free, up-to-date, interactive information in a visual format. The service includes five primary information - transport, sightseeing, food and drink (shopping), industries.

This tool can be applied:

In airports and on railway stations; in trade complexes, large business and financial centers; on exhibitions, trade-shows, fairs and in museum; in official bodies; in tourist bureaus, shops, drugstores; in any places, where to the people the information is necessary.

- **Street Finder** - The operating software includes an integrated mapping system that allows the user to find specific street addresses, landmarks, cities and tourist attractions. The GIS-based map display is fully interactive and allows the user to zoom in, zoom out or pan around the map to achieve a view they wish to print. This is all done with an easy touch with the finger!
- **Interactive Business Directory** - The interactive business directory module provides a powerful database driven touch screen directory application that allows the user to quickly search through business listing such as restaurants, retail shops.
- **Multimedia** - To further enhance the tourist's experience using the tool, the tool operating system supports full multimedia capabilities including full-motion video, stereo sound, animation and high-resolution photographic images.

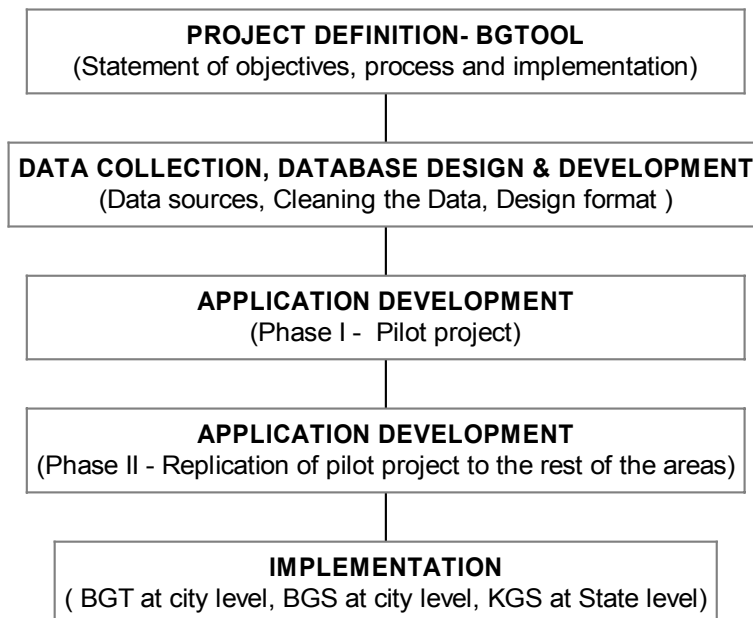
Four different types of operations are proposed at present,

- For visitors - At the locations where visitors move around like Airports, Railway stations, Bus stations, major hospitals, industries and the major exit and entry points to the city
- For local residents - The essential services like commercial centers, hospitals, hotels, eateries, etc.
- Transit points-bus shelters, bus stand, etc
- Local Area maps of specific interest (Thematic maps)-Tour of walks, parks, industries, Bike/Bicycle routes, tour of major landmarks, tourist sites, and temples etc.

3.a. OBJECTIVES

- The objective of this having in the city is to disseminate information to the public-local as well as tourists.
- It acts a guide and base for future applications development
- It's a comprehensive value addition for the existing resources or data
- It forms as the demonstrative-pilot project/application development
- Its part of the large Geo information system, and the future generation geo tools/Info systems
- Its part of the whole system(application development at the city level to the state level)

3. b.METHODOLOGY



PHASE I - OF THE PROJECT

It focuses 5 key areas of interest, transport, sightseeing (heritage), food and drink, industries, shopping, essential services like hospitals, hotels etc

- It Covers the preparation of different types of applications- major road stretches, heritage sites, transport links, industries etc
- To assess the Process of the development
- The actual implementation
- The response from the public & other agencies concerned

Types of operations: Transport related, Heritage related, Food, shopping, major hospitals & hotels, sight seeing etc, Industries- IT related other etc

Phase II of the Project

The development of the information tools at the city level and the details.

3. c. BENEFITS

The benefits in the longer term and the short term, the short term benefits like BGTool which is the immediate benefit to various agencies, public as well as visitors etc.

THE POTENTIAL USERS

1. Public agencies: BCC, BDA, BWSSB, TELECOM, BMTC, KPTCL, POLICE, Survey Settlement and land records department (SSLR)
2. Citizens
3. PRIVATE SECTOR AGENCIES: IT related and other industries

BENEFITS

- Products - Map & data sales
- Map Server-Locating various places -Live Map

4. BANGALORE CADSTRAL INFORMATION TOOL (BCIT)

The Bangalore Cadastral Information Tool (BCIT) is part of the Bangalore Geo Information System (BGS) and Karnataka Geo Information System (KGS).

This tool will act as a guide for the land owners, lawyers, surveyors, valuer's, real estate managers, locals, and various civic/government authorities to locate the various facilities or assets. It acts as a base for the future multipurpose cadastral Information System and other GIS applications. Cadastre is the principal source of information about ownership of the land. The basic unit of the cadastral is the land parcel-Plot.

At present there are three different agencies, involved at the city level cadastral related activities, like Survey Settlement and Land Records department (SSLR), Land Registration Department (Revenue) and Bangalore Mahanagara Palike (BMP). But there is no coordination and duplication of works. SSLR department, they handle works related to the survey and mapping (Maps & textual data). Land registration department (Revenue) department does the work related to the registration (only textual data, no maps) and the BMP handles the work related to property assessment and taxation works (only textual data, no maps).

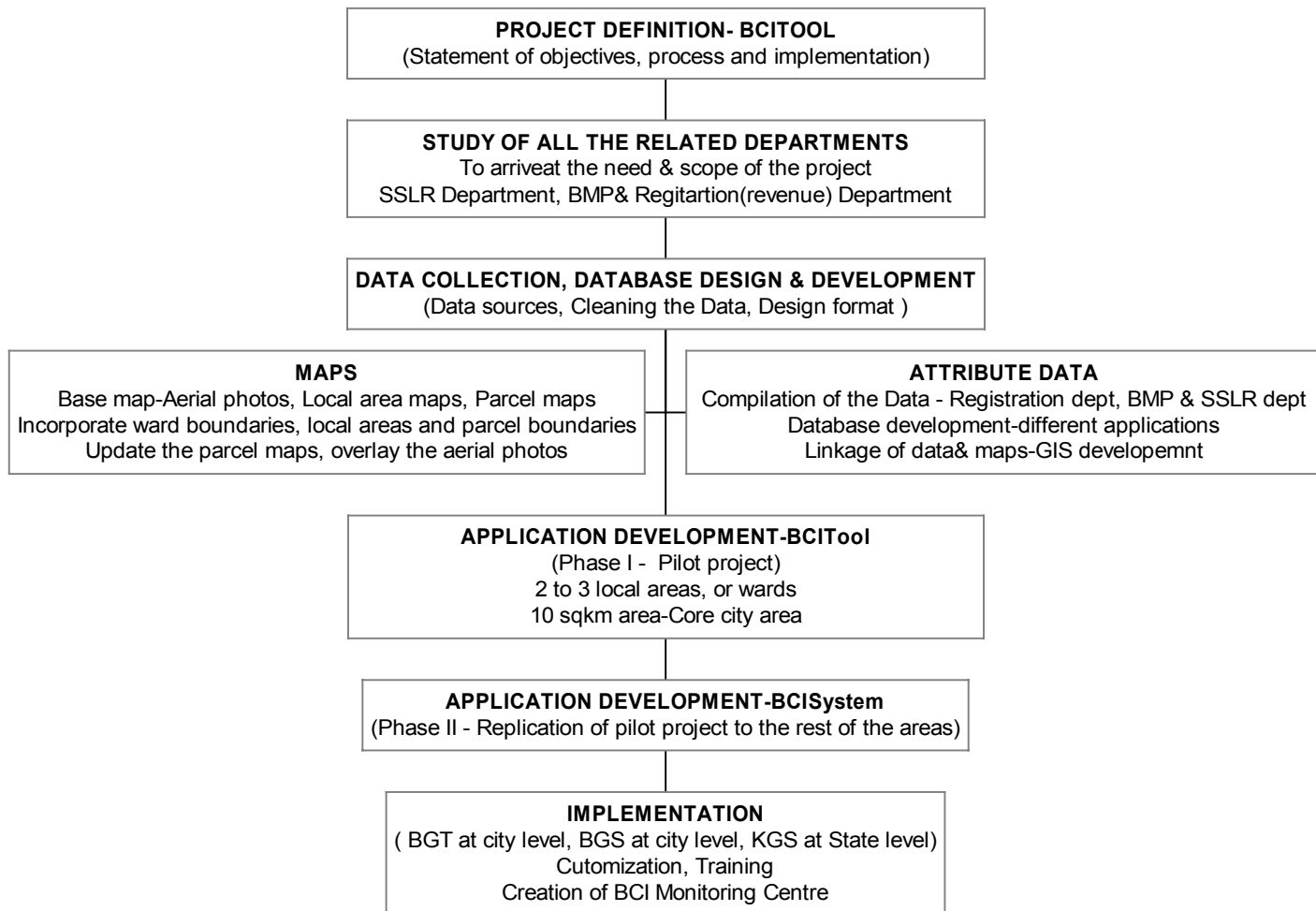
4. a. OBJECTIVES-BCIT

The objective of developing the BCITool

- To establish Bangalore Cadastral Information system (BCIS).
- To standardize the various data, both attribute as well as maps data available and used by various agencies
- Create a uniform system that uses the cadastral data based on the BCITool.

- To make it as a base for multipurpose cadastral information system
- To maximize the potential benefits of by proper management of land-Cadastre.
- It acts a guide and base for future applications development
- It's a comprehensive value addition for the existing resources or data
- It forms as the demonstrative-pilot project/application development
- Its part of the large Geo information system, and the future generation geo tools/Info systems

4.b. METHODOLOGY



4. c. IMPLEMENTATION

1. Application development – Phase I - Pilot project, development of BCITool for 2 to 3 wards or local areas or 10 sqkm core city area of the project
2. City level-Bangalore Cadastral Info Systems, BCIS and the development for the rest of the city areas
3. Customization, training and creation of monitoring center for handling cadastral related information.

4.d. BENEFITS

The benefits in the longer term and the short term, the short term benefits like BCITool which is the immediate benefit to agencies, public as well as visitors etc.

- The Physical compilation of data_less storage space is required
- Easier handling, updating allowing more effective and efficient analysis
- Merging graphical and attribute data in one set of operations

- Integration of different datasets can be managed and processed together for better analysis.
- Ensuring safety of data through use of non erasable storage devices
- Easy and faster data transfer for sharing and used by others
- Properly geo referenced land records data and integration with other land parameters will become asset for planners and decision makers
- Disputes over land titles should be avoided and decided at the earliest
- This process should integrate registration of land titles, land values/ mutation process should be simplified for easy and fast implementation
- Protection of government/public properties and asset management is easier public as well as private
- Encroachment /illegal occupation of public properties can be avoided

4. e. THE POTENTIAL USERS

1. Public agencies:

BMP, Land registration (Revenue) Department, SURVEY SETTLEMENT AND LAND RECORDS DEPARTMENT (SSLR) and (BDA, BWSSB, TELECOM, KPTCL)

2. Citizens

3. Private sector agencies

4. f. THE POTENTIAL GIS APPLICATIONS

- Property and Taxation Assessment
- Public works (Engineering) Department-Assets/Facilities Management

4. g. INTANGIBLE BENEFITS

- Timely response to the public
- Better decision making
- Comprehensive information presentation
 - Timely data update
 - Reduced data redundancy
 - Improved data accuracy
 - Improved data consistency
 - Improved data compatibility
 - Improved data accessibility
 - Enhanced data sharing

5. CONCLUSION

Bangalore Geo Information System (BGS) and the tools like Bangalore GeoInfo Tool (BGT) and the Bangalore Cadastral Information Tool (BCIT) will make a lot of difference in planning and monitoring of properties for various public, private agencies and the citizen. Since it is more scientifically done, no room for discrepancies. Accurately geo referenced data will be the biggest asset for planners and urban managers. This simplifies the process of land registration, assessment and easy to update. It can be shared among different agencies avoid duplication of data and uniform data across the data. It will act as a base for multipurpose cadastral information for various land uses. This project envisions a future where GIS is recognized, as an integral and indispensable information tool for government and business, serving the integrated information needs of both citizens and customers.