

GEOGRAPHIC INFORMATION SYSTEM (GIS) : AN IMPERATIVE TOOL FOR MUNICIPALITIES

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ABSTRACT : This paper presents the significance of geographic information system applications in municipalities as an operational and effective tool that should provide support for the futuristic decisions through the analysis of spatial and other data, including support planning. Spatial data plays an important role for the numerous activities for which decisions are made by the municipalities.

Today Urban Local Bodies (ULB) / Municipalities are expected to become self-governing units with complete transparency and accountability through modern financial management system and automation of all functions, better control on revenues and expenditures. To provide better services and to improve on competitive landscape of all the ULBs, a GIS System provides end-to-end solutions for Urban Local Bodies in various fields viz; ranging from urban planning, tourism, utility planning, environment protection, traffic management, property tax collection, agriculture, Land use land cover etc.

INTRODUCTION

Geographic Information System (GIS) is consistently on a development phase with infinite development of information and communication technologies. Based on spatial and non-spatial information and in view of place and time in which something is situated, a technology employment in different areas of business is provided.

GIS is one of the technologically developed systems that has provided and promoted the understanding of information and display of spatial data. GIS displays that data in a visual, simple form that the user can relate to. Areas that are associated with the GIS like cartography, database, geo enabled visualization etc has shown progress and advancement due to wide use of GIS. As a technology GIS does not challenge other applications, but itself represents a vital and innovative application concerned with systems for database managing and processing. It could be defined as a powerful set of tools for gathering, storing, accessing, transforming, searching and displaying of spatial data from the real world for specific purposes. (Burrough et al, 2000).

As Geographic Information System is related to spatial planning which in turn helps in establishing and managing the various resources it becomes mandatory for its application at municipality level

In short GIS or geospatial technology provides a very important and essential support to almost everything that a municipal council/corporation deals with.

Lack of consistent information due to deficient database further leads to inefficient operations for any municipality. The crux of the paper is to represent the importance of GIS to municipalities where the main features is to authorize them with better and fast decision making and increasing efficiency and decreasing administrative expenses, as well as a better connection with the citizens.

For numerous businesses issues related to planning and administrative tasks municipalities mostly rely on spatial data. With decentralization playing an important role, the municipalities have been progressively renovating into positive service and administrative enterprises of their own, and are at the continuous service of their users.

All of the objects viz; infrastructure, buildings, rivers etc.. and point of interest should be spatially represented, together with an analysis for any municipality if spatial data is to be used. To increase administrative cost or to apply the GIS technology remains the only two options for the municipalities. Truth prevails in application of GIS as an organized set of computer hardware, software, data, staff and networking which provides editing, managing, handling, analyzing, modeling, displaying of data with a spatial reference, as well as storing on a single location, its application is seen as a more appropriate and practical solution.

Although the collection of spatial data is an costly affair but once they are produced and saved in a digital format they can be easily regenerated and as they are stitched with attributes it is easy to play with other information. Also updating of the data can be done on periodic basis from various places to central GIS system.

GIS is mostly illustrated by different layers within which the data is organized into appropriate criteria. Some of the GIS layers are the revenue wards, election wards, city zones, cadastral maps, roads, properties, different layers for infrastructure, utilities etc.

Municipalities utmost requirement is spatial data/information but most of this information is available in various public or utility offices due to which several property data are outdated . Considering the fact that GIS provides

a simpler storing, saving, and exchange of data in a standardized manner, its application in this case can represent a significant solution. By connecting the municipalities with other local offices, GIS can contribute to a better usage of resources, faster exchange, analysis, and processing of information.

ADVANTAGES OF GIS FOR MUNICIPALITIES

There are numerous benefits and advantages of using GIS. Programs based on the geospatial data in municipalities, support a wide range of local and regional functions and provide an opportunity to minimize the expenses with maximum benefit to authorities.

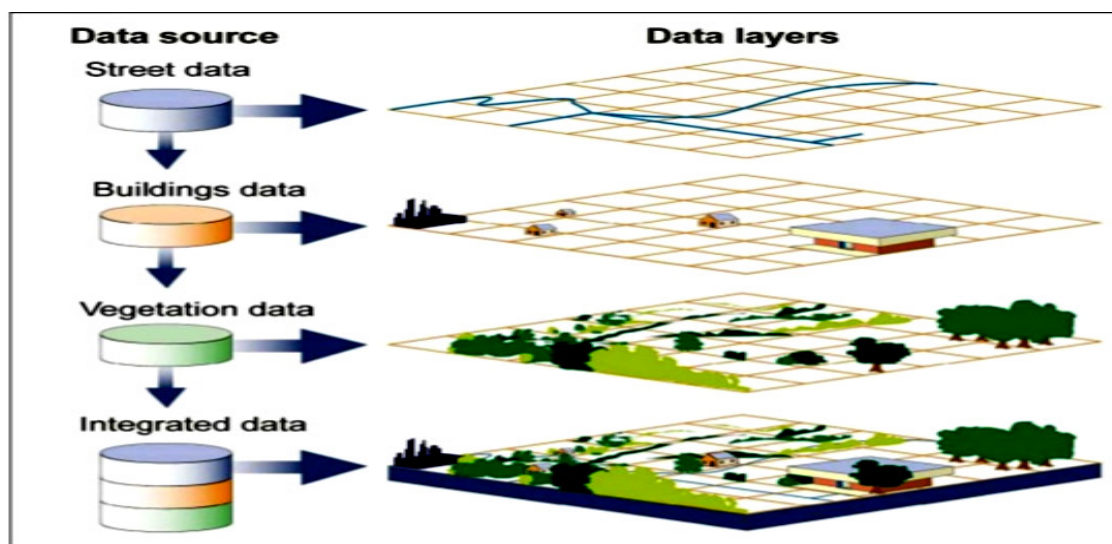
A classic use of GIS related to everyday actions in municipalities is viewed in an easier search through the properties, attribute related to the properties, urban planning, projecting, decision making etc.

GIS could easily generate sequence of maps indicating the different stages of development and showing different permits issued by the authorities. Further by entering customer survey data into a GIS database, municipality's staff can see from where people are coming from, and decide where their efforts will have the most impact.

GIS technology plays a crucial role in generating timely and confident information for planning and decision making on all levels of the municipalities (Bariar et al., 2004). According to this, it could be pointed out that an important goal of promoting the information support of the spatial development of a municipality is creation and development of GIS as a supporting instrument for planning, executing and tracking the spatial development, with acknowledging the key directives of the general plan.

The importance of GIS to municipalities can be marked through following aspects:

- lessening the administrative expenses and efficient business making
- better quality and faster decision making process
- improved connection with the citizens



Apart from these GIS is having following business benefits for Municipality,

Revenue Mapping : Helps in populating details of all municipal taxes and charges, like Property Tax, Water Tax, Approval Fees, Sanitation Tax, etc. levied on various assesses/properties.

Municipal Infrastructure Mapping: Helps in analyzing the details of municipal infrastructure like roads network, sewerage and drainage network, water supply network, solid waste management system, street light network, hospitals, building constructions, schools, etc.

Municipal Infrastructure Planning: Helps in planning of municipal infrastructure like roads network, water supply network, sewerage and drainage network, solid waste management system, street light network, hospitals, schools, etc. based on the past history and future projections of population and households. This optimized the cost of investment on infrastructure and ensures maximum use of infrastructure.

Resource/Assets Mapping: Helps in mapping the assets of the ULB for better O & M activities.

Poverty Mapping of socio-economic attributes of the poor households.

Standardization and simplification of process due to standardized and easily accessible IT systems.

Improved MIS system results in better analysis and forecasting throughout the financial year for effective administration.

CONCLUSION

Overall development and application of innovative communication and information technology which provides competent practices and future development has gained importance to GIS as a technology. GIS provides a robust decision support system and is also a powerful tool to represent the various data in spatial format. Moving further with new innovations and research it will surely be more adaptive in nature. The strength of GIS lies not only in the ability to visualize spatial relations, but also in creating a holistic view of the world that emerges from its interconnected components and complex relations.

Applying GIS in the municipalities has certainly affected the overall functioning of various departments. With limited resources and handy technology introduction of such technology is un-questionable. With GIS authorities can exchange data in much faster and easier way as it can store and save data, maps in digital format. If all the advantages of GIS are used in effective manner it will provide a robust strategy for overall development of the system. The application of this system is endless, considering that it is a process that suggests collecting, entering, and continuous updating with real time basis. A technology like GIS can be successful if it is implemented properly and more importantly depends on people working on it. Thorough technical knowledge and to implement the technology with positive frame of mind in the eco-system will surely play an important role and will make a huge difference.

Additionally a dedicated workforce, definite timelines, planned financial analysis will avoid the limitations set by the authorities in overall development of the municipalities.

REFERENCES

1. Burrough, P, McDonnell, R, (2000) "Principles of Geographical Information Systems", Oxford University Press Inc., New York
2. Bariar, A Development Of Gis Based Spatial Data Infrastructure For Micro-Level Planning. Map World Forum. Hyderabad, India: GIS Development
3. Remote Sensing and Urban Analysis, Taylor and Francis Publications, London.
4. Patkar, V.N. (2003), "Directions for GIS in Urban Planning"
5. Tiwari, D.P. (2006), Remote Sensing and GIS for efficient Urban Planning, GIS Development.
6. GIS for Urban and Regional Planning, ESRI
7. www.geospatialworld.net, "GIS is an important tool for local government By Paul Lennox"