Geographic Information System

A geographic information system (GIS) is a combination of computer hardware and software that allows for the management, analysis, and mapping of infrastructure and geographic information, and descriptive data with cartographic accuracy. Another commonly used name for GIS is "land information system."

A GIS has the ability to store and analyze information describing the location of entities and areas on the earth's surface, such as land parcels, sewerage facilities, or water bodies. This location information is often referred to as spatial information or spatial data. In addition to spatial data, a GIS can store descriptive data about those same entities. Examples of such information include, the installation date of a sewer pipe or the owner of a parcel of land. The geographic data and the descriptive data that describe them are integrally linked and can be analyzed relative to one another in much the same way as one would analyze standard tabular data from a relational database.

A GIS is unique in that it is the only computer mapping and analysis tool that provides a database interface (for the creation and maintenance of descriptive data), a graphic interface (for the creation and maintenance of spatial data) and the ability to relate these data to one another through either interface.

The Benefits of GIS

GIS is experiencing rapid growth as an information management tool for local and regional governments and utilities. Why is there so much growth in the GIS industry? Part of the answer lies in the powerful productivity and communication capabilities that computerized mapping and analysis tools can provide. These systems can enable municipal departments to:

- Organize a municipality's geographic-based information into one seamless environment.

- More effectively manage and maintain parcel, water, sewer, drainage, zoning, environmental, infrastructure and other information.

- Perform daily work more efficiently (e.g., updating record plans, or keeping records of maintenance activities and customer complaints).

- Provide a geographical reference to municipal records, including assessing, utility billing, police incidents, and other records.

- Better analyze problems and identify solutions (e.g., mapping and identifying water main breaks in terms of location, pressure, pipe size, material, or construction date).

- Satisfy regulatory requirements that are increasingly reliant on computer-generated data and maps (e.g., development of watershed protection plans or traffic management reports).

- Serve as community leaders in the collection and standardization of geographic data used by numerous departments (e.g., developing central repository of municipal data including parcels zoning, utilities, and other data).

- Foster better communication and cooperation among community leaders and the public (e.g., sharing base map data with the police department for plotting and analyzing vandalism incidents at town properties, or presenting maps at town meetings to graphically illustrate necessary improvements).

- Better serve the needs of the citizens.

- Communities that have successfully implemented GIS have seen dramatic improvements in the way in which data are accessed, maintained, and analyzed. These improvements are allowing municipal departments to make more informed decisions, collect information more efficiently, and better execute daily responsibilities.