Best Practices

An informational exchange for the best practices in municipal government

Advances in GIS Technology

by Mark Tomb

Geographic Information Systems (GIS) can be an effective tool for local government officials to plan future service deliveries as well as improve existing systems. GIS is a computer system that combines computer graphics, mapping, and databases to more effectively keep track of city infrastructure and transmit information in a more accurate and user friendly manner.

Uses for GIS technologies have expanded rather dramatically in recent years. While costs for many of these applications have stabilized, the concept can still be cost prohibitive for many cities to fully realize.

The cost of GIS systems is largely defined by the number and complexity of layers a system includes. Layers are defined characteristics that are plotted or charted on a map.

Examples of layers of city GIS mapping include things such as city boundaries, streets, sidewalks, street signs, electrical lines, sewer/water systems, fire service coverage areas, individual addresses, and crime statistics.

More layers generally result in more manpower and more software or technology to accurately chart these characteristics.

Finney County/Garden City GIS Department

A way to reduce costs for GIS programs is to develop a partnership with other governmental units that would benefit from the information. There are several examples of effective partnerships across the state including the Finney County/Garden City GIS Department.

This unified department contains two employees and has been in existence for a little more than six years. The department is an excellent example of what is possible with cooperation. The department is equally funded by the City and the County.

While the information is available for use primarily by the governments themselves, there are plans to include some of the information on various websites accessible by the general public.

GIS technology has allowed local government employees to do their jobs more effectively. Examples of how this has been achieved in Garden City and Finney County include:

- Charting of all automobile accidents to determine intersections in need of additional traffic control devices.
- Sanitary sewer lines are charted throughout the city. This information can assist city planners in charting future demand and provide projections on where services will need to be expanded or lines replaced in the future.
- Because both water and sewer lines are charted (including the direction of flow), the City can more accurately shut off segments when conducting maintenance or emergency repairs.
- Allow a more representative and big picture approach to examining zoning or rezoning issues.
- Because address information is more specific, county officials can more easily chart tax information regarding different jurisdictions and special assessments. The County can also identify precinct and polling information faster because of more detailed address information.

City of Lawrence

The City of Lawrence uses GIS applications throughout 10 departments: Administrative Services, City Manager, Fire and Medical, Neighborhood Resources, Information Systems, Legal Services, Planning, Police, Public Works, and Utilities. The City has five employees that specialize in GIS. This includes a coordinator, three analysts, and a planner.

Completed layers include street centerlines, street names, city parks, neighborhood boundaries, zip codes, major water features, city limits, flood plains, two-foot contours, school locations, and aerial photography.

The City is currently utilizing GIS technology to create a street pavement database to assist the City to determine when maintenance is needed. Maintenance and road replacements will be charted to determine the most cost-effective way of maintaining Lawrence streets.

The City is also charting elevation contours throughout the city to better determine the flow of stormwater. This information will help Lawrence officials plan more effective stormwater management techniques in new housing developments as well as locations throughout other portions of the city.

In recent years, this technology has assisted the City of Lawrence in providing more effective services in a number of ways. "The main way this has helped is by visualization," said Bryce Hirschman, GIS Coordinator for the City of Lawrence. "We have a lot of information and by having a way to visualize large amounts of data, this speeds up the process of decision making."

Kansas Geospatial Community Commons (KGCC)

The State of Kansas, recognizing the power of this technology, has established several resources to share best practices in the field.

This information can be found at the Kansas Geospatial Community Commons, an initiative of the Kansas GIS Policy Board in cooperation with the U.S. Geological Survey - Kansas Mapping Partnership Office. The website located at http://gisdasc.kgs.ku.edu/ is designed to be a place for state and local governments and the private sector to:

- Publish information about their GIS programs;
- Publish information about their data holdings into a web-accessible geospatial data catalog;
- Publicize plans for future database development activities;
- Discover geospatial data and services;
- Communicate with GIS professionals across the state; and
- Get technical support.

The website is an excellent way for local governments to see what is possible and for current practitioners to share their experiences and continue to push the GIS envelope.

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