Location Is Key

Activating the power of spatial analysis.

Geographic referencing is becoming central to managing state and local government. Virtually all data that governments use can be referenced by location. This central commonality translates to endless possibilities for more efficient databases and applications that can automate government tasks. For 37 years, ESRI has driven the revolution to make spatial analysis the anchor of efficient government.

State and local governments are now implementing server-side applications, like ArcGIS Server, which enable departments to centralize user-friendly GIS data so employees can access the information online.

The concept of referencing by location makes possible applications that incorporate geographic data from various departments into unified information systems and make that data available via the Internet. Departments no longer need to host desktop GIS applications on each employee's computer and individually update them when departments refresh the software.

As more departments deliver applications to employees through Web portals, desktop GIS applications will primarily be used by GIS specialists.

"We see the desktop as an authoring tool for data, maps, models and metadata," said Jack Dangermond, ESRI's president. "We see the server platform as a way to provide access to what the desktop products create."

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CASE STUDY

Planning Without Politics

GIS Decision Maps to help Philadelphia make the most of rehabilitation funds.

Philadelphia Mayor John Street took office in 1999, promising to revitalize the city's neglected areas with his Neighborhood Transition Initiative (NTI).

"We had a lot of buildings that were falling down — a lot of social ills that were very apparent in many neighborhoods. NTI is a comprehensive strategy that has been funded through bond proceeds to address a lot of these issues," said Beau Bradley, GIS analyst for the Philadelphia Mayor's Office.

The GIS team at the Mayor's Office used a spatial model to decide which areas of the city needed demolition. From this experience, the team developed an application called Decision Maps, which is currently being rolled out, that will help City Council members systematically determine where blight in the city exists and concentrate limited rehabilitation funding on those areas.

"It enabled us to take the politics out of a lot of these discussions and really frame them in terms of where the need was, based on this information that was coming back to us from all these departments," Bradley said.

Decision Maps is based on ESRI's ArcGIS Server and uses services to pull info from various departments such as Revenue, Water, BRT (assessment), Licenses and Inspections, and several others.

"Our enterprise GIS is a federated system, meaning every layer in the system is maintained by a department as part of the department's business process," said James Querry, GIS director of Philadelphia. "For example, parcel maps are maintained by the Records Department because their business process deals with parcel ownership and the boundaries involved."

ArcGIS Server allows components to be used separately and programmed into other applications so departments can tailor them to their business needs.

For example, the Philadelphia Office of Emergency Shelters and Services is seeking ways to use Decision Maps for planning the location of homeless shelters. The office must determine a potential shelter's proximity to public transportation, commercial areas, how it will affect its neighbors and several other criteria.

The ability of these geospatial services to work with systems across the city has already helped city organizations save time and money, and with Decision Maps more departments and community organizations will be empowered to meet their specific challenges.

"When the Records Department or the Police Department went about creating new applications, they had services to use as a resource," said Clinton Johnson, senior GIS programmer for the Philadelphia Mayor's Office. "They saved tens of thousands of dollars in new application development efforts."

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As programmers develop increasingly sophisticated uses for GIS, tools such as ArcGIS Server and the premiering ArcGIS Explorer — a free geospatial information viewer — will enable programmers in other departments to cherry-pick from those functions and data sets, match them to their own business needs, incorporate them into their own applications, and easily make the data available to employees and citizens.

"I foresee a library of geoservices that provides a platform for building applications within each department," Dangermond said.

That library would be part of a state or local governmentwide Web services suite that would slash project approval time by automatically containing each department's considerations for every location, including water, sewage, law enforcement and others.

"It would be a breeze administratively because the development processing work could be streamlined," Dangermond said. "There would be more collaboration because departments would have explicitly defined their rules for development in that geoservices library."

As GIS tools show departments their profound connectedness, the value of eliminating project development stovepipes in favor of collaboration becomes obvious.

CASE STUDY

Fast Lane

Illinois Tollway uses ArcGIS Server to streamline lane closure process.

The Illinois Tollway is making dramatic gains in integrating GIS within the Tollway environment, said Kurt Lebo, GIS Manager for the Tollway. The organization purchased ESRI's ArcGIS Server in 2005 and used it to slash time spent on lane closure approvals.

"If someone wanted to close down a driving lane for maintenance or other issues, they would send a fax or call the designated Tollway staff, who would in turn go through a bunch of manual processes to determine what lane could be closed and when. It often took them days to figure all this information out," Lebo said.

The Lane Closure application uses event table and linear referencing tools and ESRI's mapping system to show staff where closures are scheduled or proposed on a per-lane basis along the entire tollway system.

"You no longer have to talk or go to three or four people to make a decision on closing a lane. You have most of the information at your fingertips," Lebo said. Some of the available information within the application is average daily traffic, recommended closure charts, other scheduled or recurring closures, and a means of accessing event information, such as a baseball game, that may have a great impact on tollway traffic.

Previously, staff worked from 7:30 a.m. until 2 p.m. to enter a day's closure requests into the Tollway's old system. Now they typically finish data entry by 9:30 a.m.

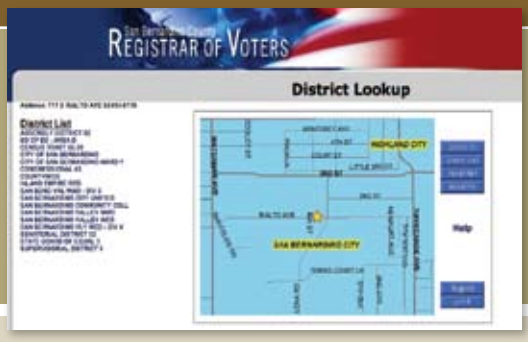
"The managers can log on to the application and see all proposed lane closures and with the click of a button, may 'approve' or 'not approve,'" Lebo said.

Lebo's team also created a linear referencing system that integrates mileposts on the 274-mile system with GIS data so users can determine how many lanes exist between two mileposts. Staff can schedule where closures will happen on the tollway system with greater precision.

The Lane Closure tool using ArcGis Server serves as a means to use ESRI's technology to effectively manage lane closures. This has been a great tool as the Tollway is undergoing a $5.3 billion Congestion-Relief Plan, and project coordination is of the utmost importance.

At Your Fingertips

Online tool helps San Bernardino County get out the vote.



Thousands of citizens regularly benefit from San Bernardino County Calif.'s progressive IT staff. One of the county's most popular services is an online tool that delivers important voting information and the voter registration application. Citizens can either fill in the application online and it will be mailed to them for remittance with a signature, or citizens can print the form themselves, sign it and mail it to the county.

The county introduced an online voter information Web site during the 1990s that listed polling locations and offered a static map to that location when the voter entered his or her address. In 2000, the county implemented ESRI's ArcIMS, which empowered IT staff to transform the Web site into a fully automated utility.

ArcIMS enables programmers to build scalable Web applications with user-friendly, interactive GIS viewing functions that can be customized based on information the user enters.

"Now when citizens type in their addresses, not only do they have an interactive map, they can pan and zoom; it shows where they live and where their voting location is. They can even download their voter information pamphlet if they lose it," said Mike Cohen, GIS team leader of the San Bernardino County Information Services Department.

Cohen said in every major election, 30,000 to 50,000 voters use the site, which offers information voters previously would have had to call the county to receive.

"It saves a tremendous amount of effort and phone calls that would otherwise have to be made to the Registrar of Voters," Cohen said.

"We've had a lot of e-mails from registered voters saying they were about to give up on election day, but at the last minute they went on the site and got the data they needed — got their pamphlet that they lost, and as a result, they were able to get out and vote. Our ultimate goal is to ensure that as many people get out and vote as possible."

The site also lists other districts that affect the address entered by the user — the water district, trash pickup, various legislative districts and so on.

"Every one of the districts is hyperlinked to a map showing the boundary of the particular district they're interested in," Cohen said.

"The site's hyperlinked map is also useful for prospective businesses," said Rick Pourroy, lead GIS programmer of the San Bernardino County Information Services Department.

"If somebody is putting in a business, they can click on where the business is going to go and see what districts affect them."

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>
> **Mike Cohen,** GIS team leader, San Bernardino County Information Services Department

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