



Maps Improve Government 2.0

GIS evolves into a strong platform for Gov 2.0, enabling greater analysis, collaboration and citizen participation.

GOVERNMENT 2.0 IS HERE TO STAY. In a relatively short time, the notion of unprecedented transparency, accountability and citizen participation in government has become the norm. And it's enabled by Web 2.0 tools. It's now common for government to use these tools for greater openness and collaboration.

The federal government is leading the way, bringing governance closer to the citizenry than ever before. "Gov 2.0 is taking constituent services to the next level, by leveraging and encouraging more citizen participation through Web 2.0 technologies," said Jack Dangermond, owner/founder of ESRI, the industry leader in GIS.

Gov 2.0 makes expanded use of technologies including cloud computing, social media and GIS. "Governments are discovering that GIS data and analysis are an effective social medium that can be geo-referenced to social networks such as Twitter, Facebook, YouTube and blogs," Dangermond said. "Traditional data will be enhanced through Web 2.0

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mashups, user-generated content and crowd-sourced data, resulting in government that is much more communicative and participatory.”

Government is openly sharing authoritative data with citizens on the Web, in the cloud and in real time. GIS forms a powerful framework for achieving this. A good example is Recovery.gov, where the federal government shares information on where and how economic stimulus funds are being spent.

The GIS mapping, powered by ESRI, gives citizens a neighborhood-level look at how their government is working.

Making It Happen

Citizens become much more engaged when a map shows them what’s happening in their own neighborhoods. GIS makes that possible. People easily understand maps, which leads to better discussion around an issue. “With GIS, citizens can see how government is performing and use that information for better decision-making,” noted Dangermond. GIS allows data to be analyzed, shared and discussed in ways that were never possible before.

Cloud computing adds another key element to open government, allowing a huge variety of data sources to be combined in intriguing new ways. “Geo-enabling Government 2.0 is leading to a rich set of cloud computing tools, open application programming interfaces and resource centers that offer the opportunity to create good government through geospatial knowledge,” Dangermond said. “This expansion of geographic knowledge will result in strong place-based governance policies.”

All governments have large amounts of data related to location. This data has been used for collecting taxes, studying crime statistics, tracking assets, zoning, and making service calls—it’s a very long list. In the past, this spatial data has been one-dimensional, residing within tables. With GIS the data becomes much more useful, helping government make better decisions.

GIS can help determine crime trends, or where to put wind turbines and solar panels. Maps can show valuable data on rising sea levels, or paths of hurricanes. They can help government determine where to spend money on levees, dams, roads and more.

Key Player

Numerous government agencies are using GIS from ESRI to share information. BroadbandStat uses GIS so states can map broadband coverage and initiatives, helping them evaluate broadband expansion scenarios. Virtual USA brings GIS to numerous agencies working on homeland security. There are many more government agencies providing unprecedented transparency and accountability via GIS.

Gov 2.0 also makes greater use of information from the public. User-generated content is becoming a bigger part of government processes, as users can give more input than ever before with today’s technologies—cell phones, digital cameras, Twitter, mobile apps and more. Citizens can easily point out problems to government—potholes, downed power lines and more—often with cell phones that also give geospatial information. Government can display the problems—and the solutions—on maps.

Do you need to see all the schools within 2,000 feet of a hazardous materials spill? GIS can show you within seconds. Want to predict where childhood obesity rates might increase in the next five years? Again, GIS can show you. And it’s not just about seeing data on maps; it’s also about analyzing the data and seeing relationships. It’s about seeing data in more meaningful ways and using the knowledge to solve problems.

“Opening government and sharing data through GIS are strengthening democratic processes and the health of the nation,” Dangermond said. “By leveraging government IT correctly, we can have a better business atmosphere, achieve more prosperous economic development, consider the environment more effectively, and have open communication and citizen engagement with government agencies.”



EPA Maps Stimulus Funds

Citizens can see where and how the Environmental Protection Agency is spending Recovery Act funds.

Americans care about the environment. They're also interested in how money from the American Recovery and Reinvestment Act (ARRA) is being spent. The U.S. Environmental Protection Agency (EPA) has merged data on these two concerns, creating an online application that shows where and how ARRA funds are being spent to improve the environment.

The EPA is administering \$7.22 billion in stimulus funding. On the EPA's map, the public can see data for any state, American Samoa and Puerto Rico. Data includes total funds obligated for each of the agency's four funding categories, and gross outlays in each category to date. Colors and charts help users grasp the data more quickly.

"We wanted to make sure we had easy-to-use interfaces, like the commercial mapping services that have become so popular over the last couple of years," said Jerry Johnston, geospatial information officer for the EPA. "We brought ESRI in with that vision, to help us put something together that's intuitive, visually appealing and really uses geography to tell the story of how our stimulus funds are being distributed." The Web site moves from visualiza-

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tion to a map that provides analysis tools and communicates contextually.

The map shows how ARRA money is being distributed in four categories: State and Tribal Assistance Grants for water quality and other initiatives, the Superfund program for cleanup of hazardous sites, the Leaking Underground Storage Tank Fund, and audits and investigations conducted by the EPA Office of Inspector General. Some of the ARRA money was added to the EPA's environmental program and management funds, which are also shown on the map. Currently the map displays data at the state level, but the next version will allow users to see data at the neighborhood level, providing even more transparency.

The EPA also is working with ESRI on ideas for creating maps from volunteered geographic information (VGI)—data submitted by the public. The crowd-sourced project

could lead to more citizen input, which could impact policies and regulatory processes. "The VGI approach is about empowerment of citizens across the country, and giving them an opportunity to tell us something," Johnston said.

In addition, ESRI is collaborating with the EPA and the U.S. Department of the Interior to consider ways to integrate spatial data into Data.gov, in order to support open data initiatives. This enables people to access federal government data sets for use in a variety of applications. It's all in keeping with the Gov 2.0 approach. "It's about engaging citizens directly in the processes that used to be less transparent," Johnston said. "I think GIS has a huge opportunity as a field—to make a big change in social government and collaboration among different communities for better decision-making."

Food Environment Atlas

Online map gives a comprehensive look at numerous factors affecting health and nutrition.

Government 2.0 embraces government that is more open and collaborative. As governments look to develop new approaches, the Economic Research Service (ERS) of the U.S. Department of Agriculture (USDA) has created the Food Environment Atlas, to provide a spatial overview of citizens' access to healthy food. The atlas is intended to stimulate research related to food availability and the dietary choices made by U.S. citizens.

The atlas includes 90 indicators related to people's food environments, including access to healthy, affordable food; proximity to grocery stores; number of full-service restaurants; expenditures on fast food; physical activity levels; demographics; income and more. Much of the information goes to the county level, and it's all easily viewable on an interactive map, which was created with ESRI's ArcGIS Server solution.

Data was collected from a wide variety of public- and private-sector entities. With this free application, researchers can look for trends and causality, while citizens can see what's happening where they live. The authoritative data presents a wealth of actionable information. And with 90 different indicators, there are virtually unlimited ways to combine and compare data sets.

The Food Environment Atlas was conceived while the ERS was working with others on a study of food deserts—areas with limited access to affordable and nutritious food. "People in the White House, and USDA leadership, started asking us questions about the data, such as, 'Where are these food deserts? Who's in them?' That started

the conversation," said Vince Breneman, chief of the Research Support Branch in the Information Services Division of the ERS. At the same time, first lady Michelle Obama's staff was working on children's nutrition issues, and the two groups began talking. That provided more momentum toward creating the atlas.

The atlas now supports the first lady's campaign to end childhood obesity. With the atlas, people can see how other data—proximity to supermarkets versus fast-food restaurants, for example—might relate to obesity. "Putting it all together is not something that had been done before," Breneman said. "So creating that kind of visual interface for people to step through a host of variables that are related to obesity—we thought that was a valuable thing."

There is much more information as well. Users can see the number of farmers markets or convenience stores in a county, or the percentage of households with no car that are more than a mile from the nearest grocery store. Simple check boxes change the maps instantly.

The result is a powerful tool for collaboration. It gives people the ability to analyze data and communicate contextually, in order to solve problems. "It promotes discussion," said Breneman. "And the discussion could be about obesity. It could be about data. It could be about technologies for delivering information. We found that it's done all of those."



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