

Esri News

for State & Local Government

Fall 2015

Rancho Cucamonga Shines as Smarter, Responsive Community

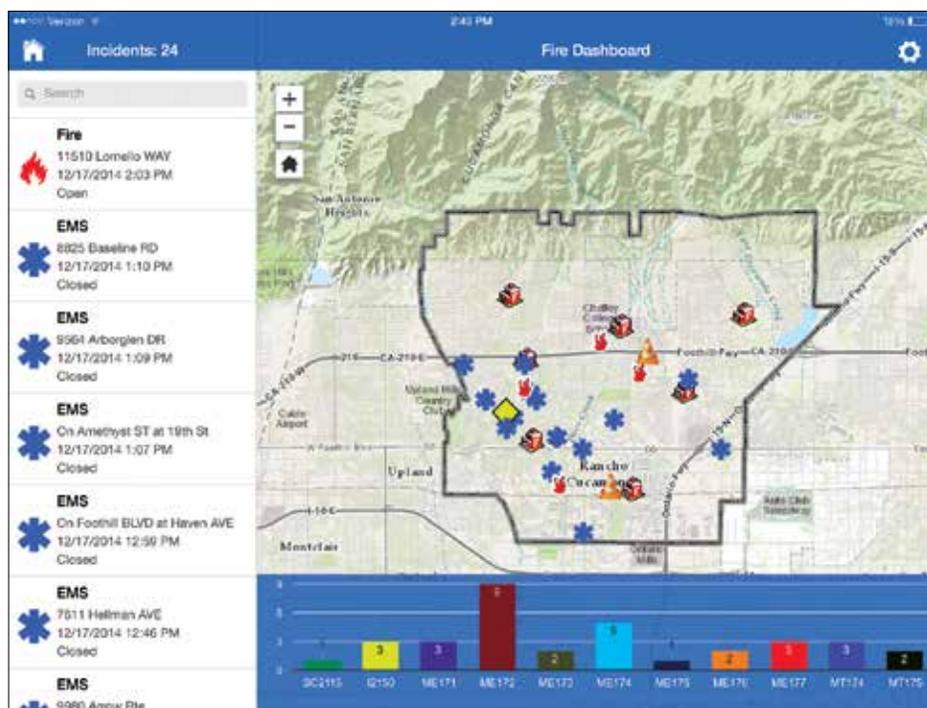
Esri Software

- Collector for ArcGIS
- ArcGIS Online
- ArcGIS API for JavaScript

Few cities are ever prepared for a crisis such as a plane crash. But when a small, single-engine plane crashed into an empty field in Rancho Cucamonga, California, the city was able to immediately respond. Thanks to geographic information system (GIS) technology and the city's commitment to act as a smarter community, staff responses to incidents, both routine and unexpected, have become more coordinated and effective.

The ability to quickly react to events is a central part of Rancho Cucamonga's operational philosophy. After years of using legacy workflows with paper notes and disjointed spreadsheets, city leadership embraced GIS technology as a way to become more informed, connected, and responsive. The city equipped its field employees with apps and data that could be accessed from mobile devices. Using apps like Collector for ArcGIS that pull data from the city's ArcGIS Online portal, field staff can now document and log cases directly from the field.

The city's sidewalk inspection team uses Collector for ArcGIS on iPads to identify and repair damaged sidewalks. When staff members locate a damaged sidewalk during daily inspection, they check their mobile GIS app to see if the



↑ City leadership can quickly see recent calls for fire service as well as information about the responding fire crew.

sidewalk has already been flagged for repair. If it hasn't, they use Collector for ArcGIS to add the incident to the map, document its condition, and upload a picture of the damage. The repair team then receives a notification and navigates to the sidewalk's precise GPS location using the mobile GIS app. Teams now spend more time in the field identifying and repairing assets via a live map, and less time in the office searching for the next case.

The city's sidewalk inspection team is just one of several groups that now

capture and stream live data from the field. With fire department, police, and other city employees acting as live information sensors, the GIS team compiled data streams into a common portal. Using ArcGIS API for JavaScript, the team created the Team RC app, which provides a live operations dashboard for city personnel. From mobile devices or computers, staff can access layers of live data about sidewalk conditions; calls for fire service; and reports of speeding, downed trees, code violations, and more.

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Every Gallon Counts

Smart Mapping Optimizes Civic Irrigation in Fontana, California

Esri Technology

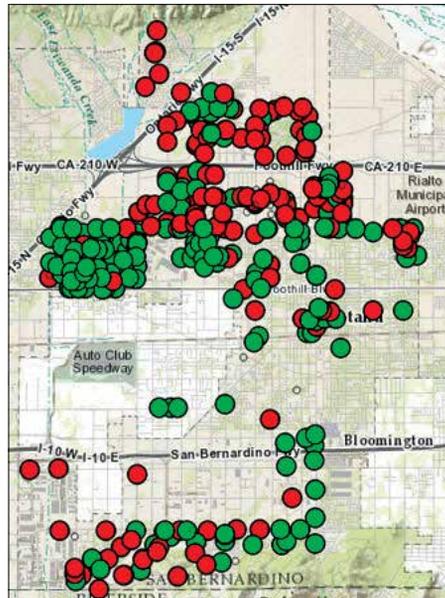
- ArcGIS for Desktop
- ArcGIS Online

In parched California, where water regulations have understandably become more stringent, public works departments are starting to map irrigation data to better evaluate water expenditure—no guesswork allowed. Because the first prerequisite of smart mapping is having data that's worth expressing visually, the Fontana Public Works Department (FPWD) decided to investigate its citywide sprinkler network, visiting each meter, valve, and nozzle to properly record its associated information. That data would then be converted into a GIS model and displayed in maps to inform Fontana's irrigation management decisions.

After eight years of meticulous data hygiene, Fontana now has full command over its water output by mapping sprinkler performance.

Feeding Lucity

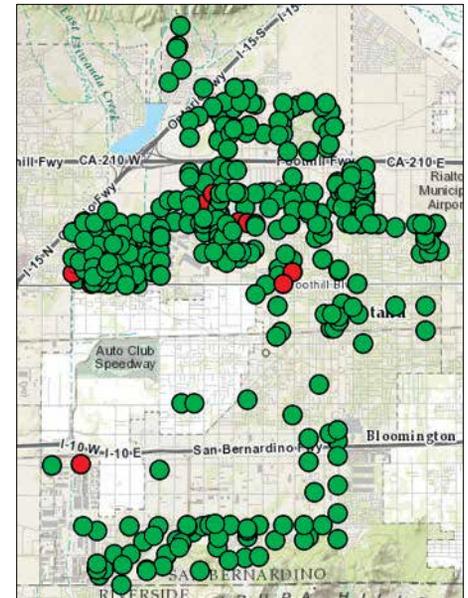
Established during the Eisenhower administration, Fontana's irrigation network has been modified as the city's turf area has grown. Because those physical changes weren't always accurately recorded in the field, errors gradually accumulated in the city's database. That erroneous representation of the city's



↑ The city's monitoring system has brought more meters into compliance in just a year, with the majority of meters showing usage to be within budget (green dots indicate usage within budget and red dots represent usage over budget).

water network made it impossible to generate a useful picture for study and response. Rogelio Matta, senior administrative analyst for FPWD, knew that civic irrigation could be better understood if the back-end information was fixed and then fed into Lucity, the department's maintenance management system.

"Lucity interfaces with ArcGIS for mapping our department data [e.g., streets, fleets, parks] and allows us to communicate tabular information visually," says Matta. "The visual element is key to the communication, since no decision



maker has the time to pore over stacks of spreadsheets."

FPWD depicts all its irrigation assets in those maps and generates work orders from them. Having the entire work history for each piece gives staff the ideal environment to keep track of all of the department's asset maintenance activity.

A Billion Gallons

Conserving civic water output entails knowing every sprinkler's performance. Now that FPWD staff had fixed the data, they endeavored to determine each sprinkler zone's output, then correct any overwatering issues that arose. To begin correcting, staff crunched numbers to arrive at the evapotranspiration rate—the rate at which dispensed water evaporates from a given area, which determines the amount of water needed for replenishment.

"We have more than 24 million square feet of irrigated landscape that requires about 58 inches of precipitation annually,"

Sufficiently watering civic turf during a wicked drought can't be done without a reliable base of irrigation information to map and study. In 2007, the folks at the FPWD got a head start on updating their water network data. FPWD now evangelizes the benefits of data hygiene and applied geography to anyone who'll listen.

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says Matta. “That’s the equivalent of a billion gallons of water.”

Controlling the system pieces to precisely sprinkle the landscape would be key to not exceeding one billion gallons. Those pieces include control devices, such as timers that tell the sprinklers how long to run, and weather stations that regulate water output according to the day’s temperature, humidity, and precipitation. Fontana has three weather stations that communicate with 480 automated timers throughout the city.

“If something’s wrong in the system, flow sensors tell the computer how long the sprinklers should run,” says Matta. “If [they run] for longer than that, [the sensors send] back that information to the computer to alert technicians to investigate the problem and fix it.”

Mapping the Metrics

Now armed with solid data, FPWD GIS administrator Joe Field could geoprocess the sprinkler information showing the monthly usage rate and map it

in ArcGIS. For every area within Fontana sprayed by a subsystem of sprinklers, such as medians, parks, and community centers, a map could be generated, populated with red, green, and blue dots denoting each nozzle’s metric.

“If it’s red, it’s overwatering. If it’s green, it’s within target. If it’s blue, it’s underwatering,” says Matta. “That was our goal from the beginning: reading the story of the systems without our eyes glazing over from all the numbers and decimals.”

Now FPWD can easily compare its target water budget to actual consumption. Workers armed with tablets in the field can view the maps of each assigned area and respond accordingly to what the dots indicate. The live update capability of ArcGIS gives workers the confidence that they’re responding to the current condition of the network and not to a situation that has worsened since the last update.

Empirical Returns

Although not all the numbers are in, results so far have been impressive. Fontana’s map-based investigation of its water expenditure revealed that at least one-fifth of its irrigated landscape (100 acres) had exceeded the target annual budget of \$700,000 by \$300,000—all because of the inefficiency of spreadsheet-dependent remediation. Visualization now translates Excel tables into actionable information to meet regulations, saving the department water, time, and money.

With experts predicting that the California drought will extend into the 2020s, water managers would be wise to begin conserving as soon as possible, starting with getting their irrigation data in order. Fortunately, most public works departments have GIS to make sense of those datasets once they’re cleaned.

“There’s nothing quite as exhilarating as preempting a lengthy audit,” says Matta. “Presenting solid metrics is the best way to do that.”



← Mapping dashboards help Fontana monitor water use and make quick, informed decisions to ensure compliance with California water-use regulations.



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by Hyland

A Simple and Ultrarugged Solution for Collecting GIS Field Data

By Neil Tomlinson



The popularity of smartphones and tablets has ushered in a new era of GIS data management. The easy availability of mobile devices and the steady introduction of quick-access apps have made collecting field data easier than ever.

Unfortunately, the shortcomings of these consumer tools have also become apparent. Accuracy is often much lower than desired. Data transfer can be tedious. And harsh environments, such as those found in the oil and gas industry, can present real problems for these devices.

These challenges have compelled hardware and software developers to think differently about data collection tools, with an eye toward more durable design, ease of use, and complete integration. And that's where ZenoCollector comes in.

ZenoCollector combines the ultrarugged, Android-based, professional-grade handheld Leica Zeno 20 with Collector for ArcGIS, one of the most powerful and configurable field data collection apps in the world. With a fully integrated Global Navigation Satellite



System (GNSS) receiver, ZenoCollector gives organizations confidence that their field data is accurate to the centimeter level. Rather than use Bluetooth or cable connections, ZenoCollector automatically syncs field changes to enterprise information through ArcGIS Online via Wi-Fi, giving everyone access to the latest data gathered in the field. And if you're out of Wi-Fi range, you can collect data offline and sync any changes whenever you regain connectivity.

Collector for ArcGIS, preinstalled on ZenoCollector, makes it easy for even

inexperienced users to get up and running quickly, allowing organizations to more effectively utilize their resources. And if you find yourself working in high temperatures or wet environments, you can put your mind at ease. ZenoCollector reliably operates between temperatures of -22 and 140 degrees Fahrenheit and has an IP67 rating for a high level of protection against dust and water.

The trend toward using consumer mobile devices to collect GIS field data is shifting as organizations recognize the need for improved performance. The next generation of professional-grade mobile data collection tools will make it easy for users to leverage the power of Collector, with increased precision, a simple interface, and streamlined workflows all wrapped in a rugged handheld. With solutions like ZenoCollector, there's no need for organizations to compromise usability and performance.

Visit esri.com/zenocollector to learn more about the ZenoCollector solution.

Rancho Cucamonga Shines continued from cover

The team also built charting widgets and intelligent filters that answer questions such as, Which fire crew has been dispatched most this week, and which homeless camps need to be addressed?

The city's approach to capturing and sharing live data across departments has transformed Rancho Cucamonga. Employees now collaborate more than ever, and the city is able to more easily share updated information with residents. Staff also perform their jobs more efficiently. For example, staff estimated

that mobile GIS increased productivity by up to 500 percent during last year's weed abatement season.

These results have been exactly what city manager John Gillison had in mind when he tapped into the capabilities of the city's GIS team in 2013. "Every day, we find a new way to use GIS to make Rancho Cucamonga a better place," Gillison said. "That's what we're most proud of."



↑ Public works staff use the dashboard to stay up to date on sidewalk improvements throughout the city.

Executives Discuss Smart Communities Solutions

In May 2015, the International City/County Management Association (ICMA) and Esri invited a small group of local government executives to Esri's Redlands campus to participate in a whiteboard exercise that would capture their ideas on how best to develop strategies for delivering services to citizens, fostering collaboration with other organizations, and measuring performance. This carefully selected group of professionals represented communities large and small from across the United States. Whiteboard exercises are informal events in a think tank-like setting where executives can learn about technology trends and discuss the needs of their organizations.

In recent years, executives have dealt with reduced budgets and staffing, the legacy of the recent recession. In many cases, the resources and funds allocated to governments have shifted. Policy changes, new legislation, and changes in the tax base mean that resources are no longer sufficient to pursue large projects. In practical terms, this means that many jurisdictions continue using legacy business systems with less-than-optimal workflows.

At the same time, these jurisdictions must deal with a growing list of issues, many related to an aging population and deteriorating infrastructure as well as a citizenry that expects additional social services for groups such as veterans and those with mental health needs. Citizens also expect those services to be conveniently accessible via the web and smartphones.

This had led many local governments to embrace a smart communities approach: using digital technologies to manage resources more effectively and engage citizens. GIS plays a pivotal role in enabling the transformation of a community of any size into a smart community.

Partnering with Communities

Over the last several years, ICMA and Esri have cohosted executive white board exercises as a way to better understand the challenges executives face and help Esri develop smart community solutions that address these needs. These exercises nominally focus on a specific topic. The most recent session zeroed in on health and human services, an area of growing concern for governments as the population ages.

However, government's role in health and human services delivery can't be neatly parsed from the other types of services governments furnish. Consequently, the initial discussion revolved around the much broader topic of how to communicate with citizens in a simple way and collaborate with other organizations. That sparked wide-ranging conversations that occupied the morning session.

The consensus was that phones, specifically smartphones, offer the single best method to reach the people who need services but may not have traditional computer access or even a mailing address. According to the Pew Research Internet and American Life Project undertaken in 2014, 90 percent of all American adults own a cell phone, and of those, 58 percent have smartphones. These statistics span virtually all income levels. This reality has been acknowledged by some jurisdictions that give out basic cell phones to homeless people because it was found to be the only effective way to communicate with this population.

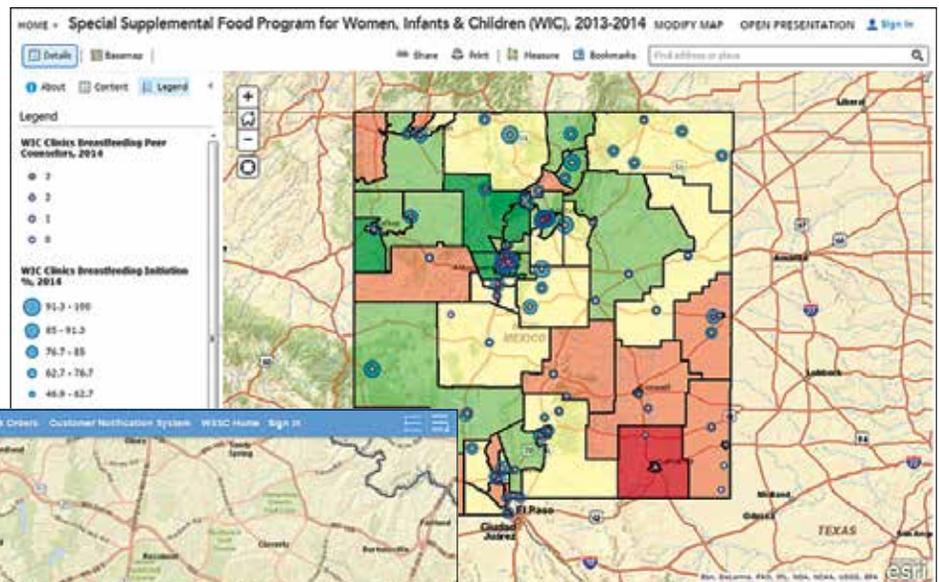
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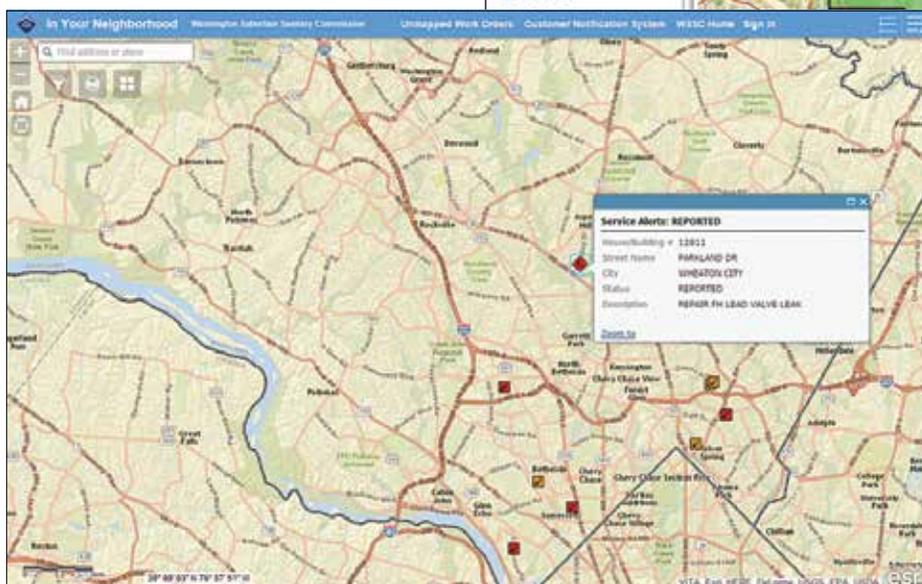
↑ In a brainstorming session, the group listed apps they would like to have developed.

← Michael Penny, city manager of Littleton, Colorado; Bonnie Svrcek, deputy city manager for the City of Lynchburg, Virginia; and Cory Fleming, program director for ICMA, participating in a whiteboard exercise discussion.

Beyond agreeing that apps are an effective mechanism for delivering information, several participants identified a fundamental problem governments have when communicating with citizens: most local governments require citizens to understand government organizational structure to determine which department or agency can supply what they need. Michael Penny, the city manager of Littleton, Colorado, and a veteran of Esri



↑ This map, created by Sarah Haynes, the community outreach and development coordinator for NMDCDC, provides information on more than 65,000 women and babies covered by the Supplemental Nutrition Assistance Program for Women, Infants, and Children program in New Mexico.



↑ This app, built using Web AppBuilder for ArcGIS, provides current information on the status of water and sewer projects for Washington Suburban Sanitary Commission (WSSC).

whiteboard exercises, summed the situation up by saying, “We did not design ourselves around apps.”

To be effective, public-facing apps should be usercentric in the manner of Yelp, Pinterest, and other popular consumer apps. Apps should be about what the citizen wants and not what is most expedient for government. “We don’t need to regurgitate the same information in yet another format,” said Penny.

John Salomone, the town manager for the Town of Newington, Connecticut, and Veronica Ferguson, an administrator for Sonoma County, California, also noted that—increasingly—the character of communication with the public is changing. Citizens, particularly younger ones, want a dialog with government, not

just an answer. Technology is helping to change the nature of public meetings from the comments of a handful of citizens who show up at city hall to an ongoing discussion online that can include input from many citizens.

GIS applications such as GeoPlanner for ArcGIS can facilitate these kinds of interactions.

In fact, GIS is almost always an aspect of citizencentric apps because information about the location of services is most useful when placed in a geographic context. People don’t always go to places in their own counties but instead go to the nearest location for services. Frequently, they don’t know or care about jurisdictional boundaries. They just want their needs met as quickly and simply as possible.

This jurisdictional indifference drives collaboration and, by extension, interoperability. By working together, local governments, agencies, and nonprofits can provide better, cost-effective service by more intelligently locating service centers. Sharing data on community resources with nonprofits and other entities not only helps get information out to citizens but can also enhance other programs, efforts, and research and lead to collaboration.

However, unlocking data and forming partnerships can be challenging. As several participants noted, some open data solutions are far from user-friendly and “are basically for geeks.” Pushing data to the cloud primarily to eliminate local infrastructure requirements and reduce costs without any real plan for making it usable does not enable data sharing or app development with that data. From a developer standpoint, disparate cloud sources of data that have not been organized with openness in mind can be, at best, difficult to use and, at worst, nearly useless.

However, ArcGIS Online—with its online hosting, mapping capabilities, and apps and templates—facilitates data sharing without requiring a high level of technical expertise. ArcGIS Open Data, a functionality built into ArcGIS Online, easily generates a website dedicated to sharing datasets selected from an existing ArcGIS Online or ArcGIS for Server site and automatically updates those datasets, ensuring that the most current data is used.

Esri director of government marketing Christopher Thomas, one of the event moderators, used the success of the New Mexico Community Data Collaborative (NMCDC) as an example of the value of data sharing using ArcGIS Online. This statewide data repository makes its health and human services data available through an ArcGIS Online site that was built entirely using free Esri apps. The site lives up to its motto, “Building community capacity to move data into action,” by making more than 200 neighborhood-level datasets with more than 1,200 variables available to other agencies, nonprofits, and researchers.

During its first few months of operation, there were 56,000 data downloads from the site. Instead of concentrating on developing health apps, NMCDC develops and shares the neighborhood-level data that makes it possible for other government agencies and universities to do research that promotes community assessment, child health, and participatory decision making.

In addition to supplying data, NMCDC will collaborate with and train users of its data warehouse, offering workshops, consultation services, and assistance to users without requiring payment. Collaborating analysts who are subscribers to the site can upload and store data, make maps and apps, use files shared by others, and copy and modify maps.

This example also encouraged continuation of a discussion of the characteristics of successful apps. Good apps should be self-service, relevant to the citizen,

unconstrained by jurisdictional boundaries, and provide context so the information can be understood. Great apps should incorporate demographics and/or the user’s profile to provide information that’s tailored to the individual and might even anticipate the user’s needs and support a virtual experience. And Esri Story Map is a great tool for sharing information with citizens and other agencies, whether that information is about the amenities available at local parks or the status of disaster response efforts.

Thomas said local governments often run into problems when they hire an outside app developer. These developers do not thoroughly understand the problem they are trying to address. They are not part of government and typically don’t understand the existing business processes or consider the needs of citizens.

Esri has been extending the ArcGIS platform to bring app development within the grasp of local government without requiring hiring developers, either in-house or on contract. For several years, Esri has been developing solution templates that supply functionality needed for land records, water utilities, public works, fire services, emergency management, law enforcement, planning and development, and elections departments. More than 150 of these configurable apps—some the direct result of feedback obtained from whiteboard sessions—are available at no charge from ArcGIS Online.

To provide greater customization, ArcGIS Online and Portal for ArcGIS now include Web AppBuilder for ArcGIS. Using this what-you-see-is-what-you-get wizard environment, nonprogrammers can create custom web mapping applications that run on any device.

AppStudio for ArcGIS, currently in beta, is another tool that lets nonprogrammers create apps. It can convert maps into mobile apps for Android, iOS, Windows, Mac OS X, and Linux that run natively on smartphones, tablets, and desktops.

An App Wish List

The group engaged in a brainstorming session to identify apps that would improve the delivery of government services and internal government processes. The long wish list included public-facing apps that

- Provide captions for hearing disabled persons attending a city event.
- Locate nearby businesses that accept Supplemental Nutrition Assistance Program (SNAP) cards.
- Apply the Uber model for sharing cars to provide transportation for seniors and disabled persons.
- Provide information on where to get clothes, transitional housing, and other necessities for people leaving jail.
- Locate all nonprofits in a community.
- Locate and describe nearby social services.
- Coordinate donations of clothing and food in response to a disaster.
- Show the real-time status of snowplows.

Internal apps were also listed. Most of these apps related to social media by aggregating feeds and mapping the interest in specific topics to support officials when dealing with the public.

After creating the wish list, apps were prioritized, and three high-priority apps were chosen: an app for capturing and aggregating social media comments, a 211 app for social services, and an app to measure the success of a job placement program. In the last exercise of the day, the group was divided into three teams and each was assigned a priority app. Each group identified the typical user for the app, the information it would provide, the information it would collect, how it would be used, and what would constitute a successful outcome.

Participants felt that walking through this robust app design process was very valuable. They planned to share the insights they gained with others in their organizations and fellow ICMA members.

Intelligently built apps that promote smart community goals help executives make better informed decisions, departments accomplish more, and citizens remain engaged with local government.

GIS Empowers Community Engagement

Geography Can Serve as a Starting Point for Building Strong, Lasting Relationships with Communities

Have you ever walked through your neighborhood and seen a geyser of water from a broken sprinkler head, or a tree branch lying in the middle of the street, or graffiti on a bus stop shelter, and wondered how you could notify the right people to come and take care of it? It's a common situation people find themselves in, not only in their neighborhood but also in almost any type of community they belong to.

Governments, companies, nonprofit organizations, and even loosely connected social groups such as bird watchers and people who like farmers' markets face similar issues because they're not set up to gather people's observations and manage that information in a meaningful way. They lack the tools to facilitate community engagement.

Geography can serve as a starting point for building a community engagement strategy, and GIS technology can provide the tools to accomplish it. Maps and spatial analytics form a universal translator that allows individuals living and working in communities to build strong, long-lasting relationships with other people simply by sharing geographic information.

Here are three ways to get started with community engagement using ArcGIS:

1. Empower your community with crowdsourcing apps.

Crowdsourcing is the process of collecting volunteered information from people. Given the right tools, they can become your eyes and ears on the ground. But if social media has taught us anything, it's that when you ask people to volunteer their observations, you may end up with more than you can handle. To avoid information overload, focus on a specific problem or a manageable set of choices.



↑ Glen Canyon Institute used the Esri Story Map Journal application to create its story map, The Place No One Knew.

Surveys are one form of crowdsourcing. Conducted person-to-person or via a website, these can be used to create inventories, gather information about people's experiences, or take stock of what a community is thinking about certain issues. When combined with geography, surveys can demonstrate how important a place or the surrounding environment is to the matters in question.

ArcGIS Online subscribers can create and deploy location-based surveys using the GeoForm template, which generates responsive, web-based forms. For example, an emergency management organization could develop an inventory of medical personnel for disaster preparedness activities by asking doctors and nurses to visit the organization's website and fill out an identification form.

GeoForm makes conducting surveys simple and straightforward and gives users a sense of urgency that a community can understand. The template's source code can be downloaded on GitHub.

The Esri Crowdsourcer Reporter app template also makes it easy to integrate geography data with important issues. The template, available from ArcGIS

Online (with the source code on GitHub as well), allows developers to configure responsive apps that work on smartphones, tablets, and desktop browsers to maximize community engagement.

The City of Los Angeles, for example, began a concerted water conservation effort, called EveryDrop, to help tackle California's current serious, decade-long drought. The project's mission is to provide applications to the public and government agencies so they can help curb water waste and promote water conservation. As part of the EveryDrop platform, the city offers a free crowdsourcing app for Apple and Android phones that allows citizens to report the location of water waste. The app also teaches users how to better conserve water.

Empowering people to send in their observations is one thing; doing something with the data is another. A critical process for maintaining a crowdsourcing channel is to aggregate the crowdsourced data, analyze it, and then take action.

Crowdsourcer Manager, a companion application to Crowdsourcer Reporter, helps organizations do just that. It presents data in both map and table formats

and includes tools for finding patterns, reviewing details, updating statuses, and assigning responsibilities. This template is also available for free with an ArcGIS Online subscription.

2. Tell stories to your community.

Telling people a story that's relevant to their location is powerful—especially if it's related to an issue they care about.

Storytelling is also a great way to communicate with stakeholders inside an organization, including managers and executives.

Giving a narrative form to geographic information impresses it with realistic character that just doesn't come across in charts or graphs. Story maps, which combine interactive maps with multimedia content, provide an engaging way to explore data and navigate information nuances.

Glen Canyon Institute—a nonprofit that seeks to restore and preserve southern Utah's Glen Canyon, which was flooded in the 1960s when part of the Colorado River was dammed—has a loyal community of members and people who want to get involved in its conservation projects. One of the ways the institute communicates the importance of its mission is by providing a story map on its website that takes viewers on a virtual tour of the Colorado River, using more than 100 photos of key points of interest. ArcGIS Online subscribers can create and share their stories using Esri Story

Map applications, including Esri Story Map Journal, the app Glen Canyon Institute used. While creating a story map may seem like a daunting task, it is actually just a matter of organizing and presenting the information; the Story Map templates take care of the rest.

3. Use dashboards to help drive your community engagement strategy.

Dashboard applications, which consolidate complicated and often dynamic information into one simple view, are escalating in popularity. That's because everyone wants to know the status of a project or get minute-by-minute updates on events in progress such as elections or emergency management operations.

Dashboards help people absorb information with just one glance, much like looking at the dashboard of a car. These applications can be specific to project activities or organization assets or can outline the progress of a program as a whole. This makes dashboards especially important for decision makers and other people who need to stay on top of an unfolding situation. They need to know what's going on and where things are happening—in one look.

Geography works well with dashboards. Maps again become the universal translator that helps people orient themselves to the information at hand. However, unlike

crowdsourcing, which can evolve into a long-term dialog between communities, and in contrast to story maps, which can be used to reinforce the scope and commitment of one community to another, dashboards get personal and go behind the scenes. They can help organizations monitor and evaluate their community engagement strategies.

The Summary Viewer solution template, available with an ArcGIS Online subscription, can turn a map into a dashboard to report metrics. It summarizes the numeric attributes of features in a specified map layer and displays the ones that appear on the visible area of the map. The summaries can be configured to show the sum, average, minimum, and maximum of specified field values. So, for example, the owner of a chain of retail stores could see all his stores in a given geographic area, plus the total number of employees, the square footage, and the sales amounts for those stores, all on one dashboard.

Everything Rolled into One Community Engagement Project

In a more encompassing example, a city is looking to streamline its processes for fixing potholes. It could develop a crowdsourcing app that encourages the community to report potholes on city streets. An operations manager could use the Crowdsourc Manager app to organize and validate reports and then assign work appropriately. The city could then put up a public-facing story map that displays the crowdsourced information and shows the potholes that have been fixed to assure the community that its reports are making a difference. Meanwhile, project stakeholders could use an internal dashboard to stay abreast of how the project is going and what is being accomplished.

Building Apps, Building Relationships

Community engagement initiatives hinge on active listening, participation, and



↑ Summary Viewer is a configurable dashboard for reviewing complex statistics at a glance.

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Land Records Investigation Gets Bionic Upgrade in Minnesota

Esri Technology

- ArcGIS for Desktop
- ArcGIS for Server

St. Louis County, Minnesota, no longer searches for land records the old-school way. Using the Esri platform, its Planning and Community Development and Information Technology departments designed a portal that gives staff access to the county's land records store and digitized maps in a secure environment with simple controls. With the portal, users can get specific documentation in just a few clicks.

Like a Gumshoe

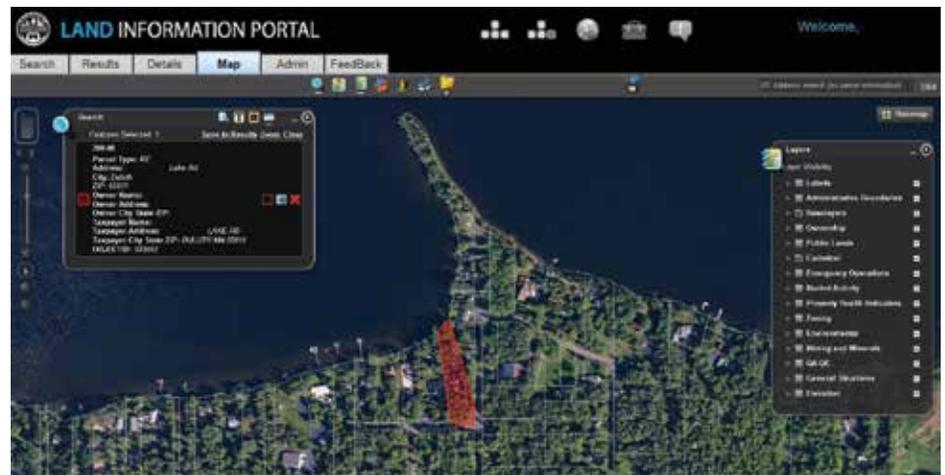
Until recently, investigating land records required the Planning and Community Development staff to canvass the large county in northeastern Minnesota, gumshoe style.

"Our records were strewn across 7,000 square miles," said Darren Jablonsky, deputy director of Planning and Community Development in Duluth, Minnesota. "When we retrieved what we needed, we'd have to manually connect all the property identification numbers and addresses to get the correct information and relate it to a spatial location."

That typically involved fusing data in paper records and spreadsheets to spatial data. The purpose was to present users with all pertinent land records information about a property within a digital map.

The diversity of the collections dizzied the mind: large paper maps, map books, indexes, spreadsheets, desktop- and web-based applications, and imaging systems. Over the years, St. Louis County had amassed a galaxy of land records information. Predictably, long delays were commonplace.

St. Louis County's 1,700 employees bemoaned the slow system not only for its impact on their workflow but also because



↑ Once a parcel is selected, the user can view recorded documents within it, such as quitclaim and warranty deeds, land-use permits, certificates of survey, plats, and photos.

clients who requested land records had to wait weeks to get information.

"Delaying response to the people we serve—not just residents but [also] Realtors, surveyors, engineers, mining companies, nonprofit agencies, and investment firms—didn't sit well with any of us," Jablonsky said. "Keeping morale high is important here."

Designing a new GIS-based system to manage and retrieve land records would require support from departmental directors, the St. Louis County Board of Commissioners, and outside consultants.

Portal to the Digital Dimension

The board members and directors led the effort to create the Land Information Portal. After creating a focus group to address all the land- and property-related issues that departments dealt with, the board appointed a team to launch a digital one-stop shop of recorded documents and data that county staff could access. In 2009, the board of commissioners adopted the Land Records Management Plan to establish an enterprise GIS division to direct the development of the Land Information Portal.

First, the county would have to digitize all land documentation for ease of access to the records. To further complicate

matters, all county recorders, assessors, auditors, planners, surveyors, and rights-of-way agents work with multiple types of paper records and documentation, such as photos, quitclaim deeds, and titles. Fortunately, digitization had already been under way throughout the county.

"Many of the departments were in the process of converting both paper and microfilm to digital for sharing and integration with their applications," Jablonsky said. "This made it easier to standardize a single-access method in the portal for retrieving and displaying recorded documents and images."

St. Louis County contracted with Pro-West & Associates, from Walker, Minnesota, to configure the portal framework. Together, they developed the querying architecture to optimize searching, SQL Server Reporting Services reports, and GIS mapping services. County IT developers linked many existing web-based applications within the portal and used ArcGIS for Desktop to design and deploy web services to ArcGIS for Server.

Popular in Use

The portal has become an invaluable tool in a surprising number of staff workflows.

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Making Your GIS Relevant to the Community



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Getting the Results You Want from GIS

By Cory Fleming, CRM Program Director, ICMA

While attending the Esri User Conference in July, I learned that 20,000 local governments use GIS technology globally—20,000! Through peer-to-peer sharing and networking, that number represents a tremendous capacity for improved operations. Isn't it likely that if your community builds a good app or dashboard, it would work equally well for one or more of your neighbors?

As GIS technology moves to the web and becomes increasingly intuitive for non-GIS professionals, the technology is transforming how local governments do business. For local government managers, the challenge is to meet high expectations and encourage their GIS teams to work with all departments to create and innovate.

Chris Cappelli, Esri's director of global business development, shared some tips—based on his own experiences—on how local governments can establish a collaborative environment that delivers the desired results.

- **Leverage GIS as an enterprise asset.** GIS isn't just for a few departments within your local government. Treat GIS as a resource for all your departments.
- **Focus your GIS professionals.** Let your GIS team members know what the priorities are for your organization and work with them to define how they can deliver on those priorities.
- **Empower everyone with maps.** Some departments will inevitably have a harder time envisioning how they can use GIS technology. Show them how maps can work for them.
- **Create a destination portal.** We all have portals that we go to in our personal life for information, like websites for travel info

or reviews of consumer products. Portals have tremendous value in turning data into information that employees can depend on to do their jobs.

- **Integrate with your other mission systems and data assets.** Whether it's an enterprise resource program (ERP) for budgeting and cost accounting or a work order management system for tracking projects, such systems need to be integrated and work together. Stand-alone systems that don't work with other systems in your organization add little value.
- **Configure commercial off-the-shelf software as a platform.** Use straightforward configurations, rather than custom code, to create a better fit for your organization.
- **Get involved personally.** Use maps, apps, and dashboards and let your GIS team know what you like and don't like about the product.
- **Create map series that are tied to your business objectives.** Use the series to look for leading and lagging indicators associated with your business objectives.
- **Organize effectively.** Employ good people throughout your organization and give them the support they need to innovate.
- **Promote a culture of sharing and collaboration.** In any organization, it's easy to become overly focused on tasks directly related to one's job. As a leader of your organization, remind people that they are an important part of a larger mission and help them see how working together can have an even greater impact.

GIS Empowers Community Engagement continued from page 11

trust. Geography and mapping technology can play a key role in opening up and sustaining the communication channels necessary to successfully support communities both inside and

outside an organization. Getting started with a few simple GIS applications can help organizations build strong, long-lasting relationships with their communities.

Land Records Investigation Gets Bionic Upgrade in Minnesota continued from page 12

Assessors use the portal to view real estate market data by neighborhood; calculate assessment and sales data; and ensure fair and equitable assessments of taxable residential, commercial, agricultural, and industrial properties. Planning and Community Development staff rely on the Land Information Portal to conduct development reviews and coordinate with the City of Duluth on property blight removal. The county's Public Health and Human Services department also uses the portal to access assessment history when screening foster care applicants and reviewing public assistance cases. Its wide applicability even surprised its creators.

"It's been amazing to see the different uses of the portal by individual users and within departments," said Jablonsky. "The wealth of data alone has been a valuable resource, breaking down data barriers across all our departments."

The Land Information Portal plays an integral role in the county's daily operations and serves as a perfect model for any county to replicate. Esri recognized the successful model, honoring the county with a Special Achievement in GIS Award at the 2014 Esri User Conference.

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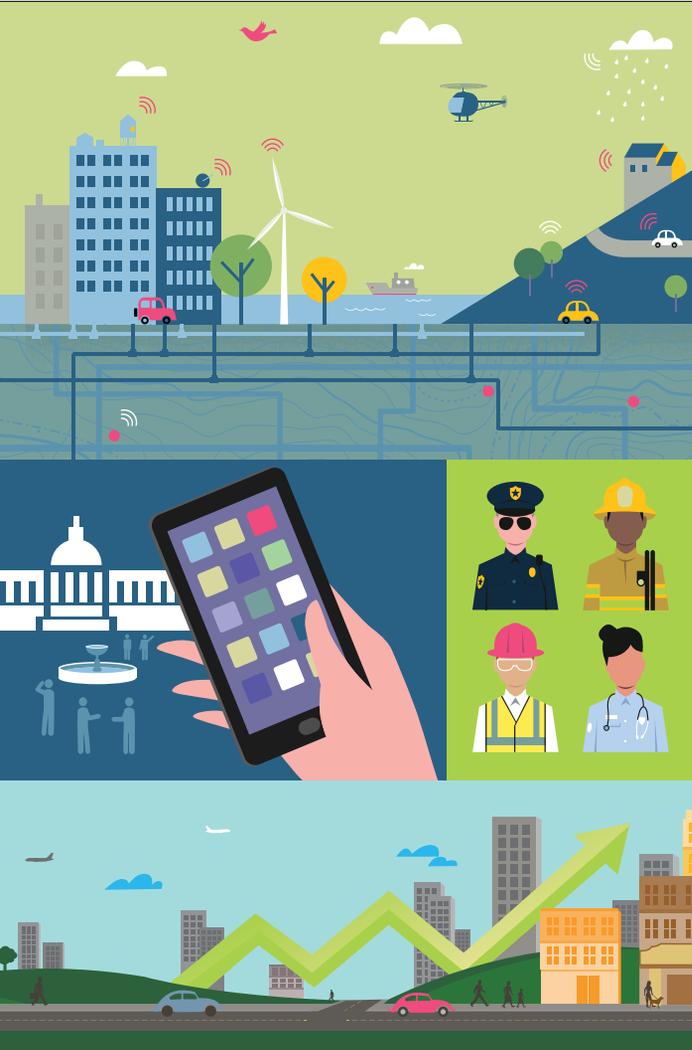


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