GOVERNMENT TECHNOLOGY
SOLUTIONS FOR STATE AND LOCAL GOVERNMENT
VOL26 ISSUE9 | SEPTEMBER 2013

INSIDE:

Serious Play:
Using gaming technology to engage citizens

Top Tech:
Meet the nation's most IT-savvy counties

Special Report:
Analytics for smarter communities

We check in with initiatives we've covered over the past few years and ask, 'Where are they now?'

What Happened To...

PLUS:

Idaho CTO
Greg Zickau

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GOVERNMENT

An ever-increasing amount of your staff is using mobile devices for work. But without a complete mobile solution in place, your infrastructure can be overtaxed and sensitive data may be at risk.

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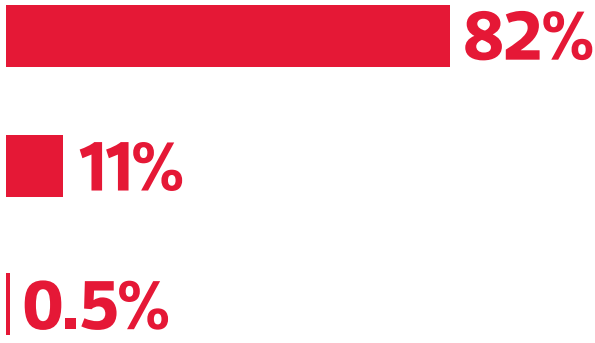
2012 INCREASE IN SALES[1]



AND IT'S CHANGING THE WAY YOUR AGENCY WORKS. »

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[1]IC Insights, IC Insights Raises Forecasts for Tablets, Notebooks and Total PC Shipments [2]Center for Digital Government, "Mobilty and Security Research" September, 2012

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September 2013

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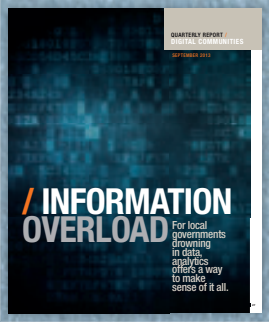

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A Better Build?
How Oregon used design thinking to create its health insurance exchange.

The New Sketch Artist
Using DNA, an artist can create 3-D models of what deceased individuals looked like.

Cyber Fusion Center
New Jersey fights online threats with a dedicated cyber-security unit.

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By Steve Towns / Editor

Some Friendly Advice

If you had a chance to speak to some of the nation's largest IT vendors and systems integrators, what would you tell them? That was an opportunity given to a panel of 10 state and local CIOs last month at the Center for Digital Government's annual Industry Summit.

> "YOU GUYS ARE TALKING TO EVERYBODY — I WANT TO HEAR WHAT OTHER PEOPLE ARE DOING."

The meeting, held this year in Jackson, Wyo., is designed to help vendors understand CIO priorities and foster better collaboration between the public and private sectors. As you might expect, the public-sector panelists had plenty of suggestions for representatives of more than 30 companies in attendance.

Boston CIO Bill Oates urged vendors to share information about what their most successful customers are doing. "You guys are talking to everybody — I want to hear what other people are doing," he said. "Don't sell me product. Tell me about solutions you've implemented in other places, and then take the time to tell me how that solution might work for me."

Colorado CIO Kristin Russell urged companies to invest in government-specific solutions. "I would love it if vendors would build [commercial off-the-shelf] solutions for government," she said. "That's what we need. We need products that are actually developed for government."

And Texas CIO Karen Robinson simply asked that industry reps come to her office prepared. "We have a technology plan. Read it," she said.

In addition, most of the CIOs were adamant that use of shared systems and collaborative projects will grow in the government space. And they were optimistic that industry would support those efforts, instead of seeing them as a threat to profits. Michigan CIO David Behen noted that his state has agreed to share its Medicaid Management Information System (MMIS) with Illinois. He said states can't continue to separately develop major systems like these — it's simply unsustainable. "MMIS systems are $150 million per state. That's crazy," he said. "I think industry is coming to grips with that."

Finally, both Behen and Pennsylvania CIO Tony Encinias challenged vendors to help reform government procurement processes, which remain too cumbersome and unfriendly to innovation. "Use your lobbyists to influence changes in procurement law," Encinias told Industry Summit attendees. "We moved IT purchasing to my office from the Department of General Services, which helped some. But it is still very difficult."

What's on your wish list? GT

RAISE YOUR VOICE

Your opinions matter to us. Send comments about this issue to the editors at **editorial@govtech.com**. Publication is solely at the discretion of the editors. *Government Technology* reserves the right to edit submissions for length.

Correction: In the *Searching for Clues* story in the August issue, Sheena Lovette's name was misspelled due to an editing error.

AN AWARD-WINNING PUBLICATION

ozzie ASBPE ee Silver Folio: Editorial Excellence Award Maggie Award Winner TABPI WINNER TRADE ASSOCIATION BUSINESS PUBLICATIONS INTERNATIONAL

reader/**comments:**

"What happens to your personal device and your personal data when it is subpoenaed for business use? I think you are being stupid if you open that exposure. If work wants you to be online that much, they can provide the device. If it's not worth them spending $700 a year for you to be connected, it probably isn't worth the risk to you.

***Jonny33421 in response to* Alabama State Agency Enforces BYOD Security**

"FirstNet has a relatively small window of opportunity to make a difference and impact public safety interoperability. Don't lose any time that you will never get back. Establish significant operational goals with beta sites and get moving before the sun sets!

***Thomas McQuillan in response to* An Interview with Teri Takai on FirstNet**

"So it is going to result in one big giant database of information. What could possibly go wrong?

***henchmannumber2 in response to* Several Agencies Linked in ACA 'Hub'**

"The danger is not who you are talking to, but the fact that you were driving while distracted. One commenter stated that they can see from the cell towers and phone number if the phone was in use at the time of any accident. That is all that is needed. But if the ticketing can be done at the scene, it makes it a lot more comfortable for the other party involved.

***dslewis in response to* Would Checking Cellphones After Collisions Truly Help Police?**

"The importance of employee recognition cannot be understated. Employees who feel valued and appreciated are likely to speak about their manager, work group and organization in positive terms when speaking to others. If attracting and retaining talented people is a priority, then maintaining an awesome reputation should be also.

***mjohnston in response to* Four Things You Didn't Know About Employee Recognition**

Empowering Through Innovation

Chief innovation officers are popping up in U.S. school districts. At least four districts have hired district-level chief innovation officers since 2011, while Newark, N.J., Public Schools created the position in some schools.

The move is long overdue, said Art Fessler, superintendent of Community Consolidated School District 59 in Illinois, who hired an innovation officer for the district in July. Probably 70 percent of school districts need a complete innovation makeover, he said, adding that students often are more creative outside of school than in the classroom.

The district's new chief innovation officer, Ben Grey, seeks to support school leaders as they help students learn to collaborate and solve problems. "That's the exciting piece of my job — to empower people and build capacity in a way that inspires," Grey said.

10,000

The number of videos available online through the Seattle Public Library's new Netflix-like streaming media service.

TOP-TWEETED STORIES

Introducing the 21st-Century City Hall — 53 tweets

Using QR Codes to Enhance Learning — 47 tweets

Can Libraries Survive the E-Book Revolution? — 47 tweets

HOT OR NOT?

Most read stories online:

5 Things Every Good Website Should Have
3,379 VIEWS

Introducing the 21st-Century City Hall
3,060 VIEWS

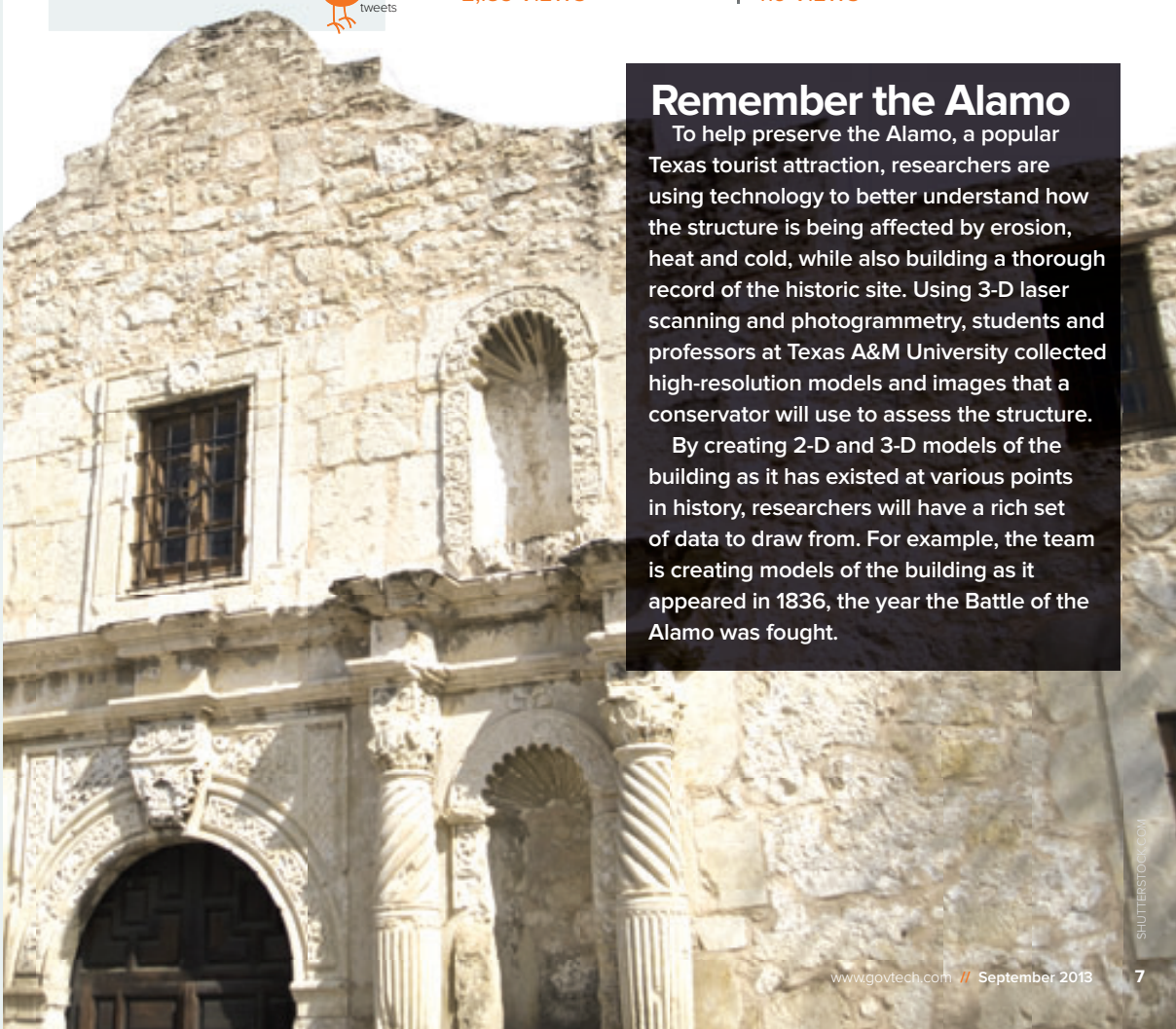
2013 Digital Counties Survey Winners Announced
2,185 VIEWS

Least read stories online:

Missouri Ag Program Uses Tech to Track Cow Health
183 VIEWS

Can Twitter Help Gauge Community Well-Being?
161 VIEWS

Streamlined Silent Auction System Eases Process in Arkansas
119 VIEWS



Remember the Alamo

To help preserve the Alamo, a popular Texas tourist attraction, researchers are using technology to better understand how the structure is being affected by erosion, heat and cold, while also building a thorough record of the historic site. Using 3-D laser scanning and photogrammetry, students and professors at Texas A&M University collected high-resolution models and images that a conservator will use to assess the structure.

By creating 2-D and 3-D models of the building as it has existed at various points in history, researchers will have a rich set of data to draw from. For example, the team is creating models of the building as it appeared in 1836, the year the Battle of the Alamo was fought.

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Greg Zickau

CTO, Idaho

GLEN OAKLEY

As CTO of Idaho since 2008, Greg Zickau has spent the last few years helping the state push ahead on IT initiatives he hopes will create long-term benefits. Improving governance, building out Idaho's core IT network and extending the state's education network are some of the priority items on Zickau's to-do list.

1 **What is the Idaho Education Network and why is it important?** The Idaho Education Network is a private network that connects all of the state's high schools. It connects to the districts and then uses district networks to connect to the high schools. The intent is to enable rural students to participate in educational content that they haven't had access to. It's honestly one of the most exciting things that I've been involved in throughout my technology career because I can see it making a difference in students' lives.

We've been able to extend, for example, high-level math courses to rural students who didn't have the opportunity to take advanced courses. As a result of that, we've seen students go on to MIT, Cal Poly and advanced schools like those.

2 **Funding for Idaho's core IT network has been approved for fiscal 2014, how will this help shape IT for the state?** If you don't have the network foundation in place, then you're not going to be successful. So we have to get that in place and get it right. Health information exchanges, which we want to bring online by fall, will require a robust, reliable network. So with all of our core upgrades to the network, we want to get that done in time.

But it allows the discussion too. We've got all these various small data centers in the state. Do we want to do anything with those? Or do we want to do something with cloud computing? Different agencies and their lines of business have different takes on what's appropriate. Now we have the network capacity and support to do a hybrid, private or public cloud initiative.

3 **Based on those choices, are you leaning toward a specific cloud model?** I believe we're going to end up with a hybrid, and we're really working toward a federated model of IT governance that focuses on allowing the agencies to meet their own business needs.

4 **How do you plan to fully carry out the Idaho IT strategic plan initiatives?** We'll be asking questions like: What priorities for the business do we want? Do we want to focus on efficiency? Do we want to focus on flexibility? If we're focusing on efficiency, then it may well be that we do some kind of data center consolidation. If we're focusing on flexibility, we'll probably be focusing more on cloud. GT

— Sarah Rich, Staff Writer

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We check in with initiatives we've covered over the past few years and ask, **'Where are they now?'**

What Happened

Remember the project that seemed like it could be a game changer for how government provides services to the homeless? How about the initiative by numerous states to collaborate on cloud data storage? Or the one that sought to redefine how local governments share apps with each other? *Government Technology* caught up with these and other projects that had potential to redefine government's work, services and systems. Here's a look at what's happened since we first reported on these noteworthy initiatives.

To...

Wilmington, N.C., helps pioneer 'white space' network products

THE ORIGINAL STORY: In 2010, Wilmington became the first city in the nation to begin testing TV "white spaces" and applications. White space networks take advantage of unused bands of wireless spectrum that were left over when television broadcasters switched from analog to digital. Wilmington was a natural choice to be a guinea pig for applications based on white space networks. The city was the first major market in the U.S. to switch to digital TV in 2008.

In spring 2010, *Government Technology* reported that Wilmington planned to use wireless traffic cameras at intersections to monitor traffic, travel time and fuel consumption, and to support local law enforcement. In addition, water-level sensors would be used to monitor and manage wetland areas in the coastal city without a boat trip.

PROJECT UPDATE: As planned, Wilmington became a valuable test bed for white space devices and it has put the technology to work on several "smart city" initiatives.

In 2011, the FCC officially approved the use of white space for wireless broadband networks. The ruling was significant because wireless broadband requires the use of spectrum, which is a limited resource. Using white space to provide broadband service is now part of the FCC's overall plan to find more wireless spectrum and expand broadband availability across the country.

Today, Wilmington uses white space spectrum to monitor real-time water quality and traffic conditions on roads that previously lacked access to a broadband connection. In addition, the city helped with the development of new white space devices that are just now reaching the market.

"Over the past couple of years, Wilmington has done a lot of work with original equipment manufacturers and radio vendors to test and evaluate their products," said Rodney Dir, president and CEO of Spectrum Bridge Inc., a company involved in the early testing efforts.

In 2012, the FCC approved the first white space device. There are several additional devices pending approval. Estimates are that by the end of 2013 there could be six FCC-certified devices available, many of which were tested in Wilmington.

/ JUSTINE BROWN

As the Gmail contract ends, is L.A. done with Google?

THE ORIGINAL STORY: Los Angeles stepped way out on a limb in 2009, becoming the biggest city in the nation to move its entire email system — used by 30,000 municipal employees — to Google's Gmail service. The city's massive shift to the cloud would become one of the most closely watched IT deployments in local government over the next several years. Los Angeles CTO Randi Levin told *Government Technology* in 2010 that using Gmail to replace the city's in-house GroupWise email system would let her eliminate 92 servers and reassign nine employees responsible for maintaining that equipment. In addition, city workers would get more reliable email and a suite of new features.

PROJECT UPDATE: Four years later, the project never exactly delivered on its promises and never was completely finished. Although the city moved email for 17,000 employees into the cloud, it could never transition police and other public safety personnel to the hosted system, leaving about 13,000 employees on the GroupWise platform. The city formally abandoned plans to move cops into the cloud in 2011, citing security concerns.

Now Steve Reneker, who replaced Levin as city CTO last year, is prepared to rebid the contract. Los Angeles' five-year contract with Google ends in a year, and Reneker said he has no preconceptions about what the city will do next.

"We are at a juncture right now," he said.

Reneker said the next contract will be 10 years long and split into three parts: email, applications and security. That will give Los Angeles flexibility. His sense is that city employees are comfortable with Gmail and don't want to switch away from it, but he says "conversion issues" between Google Docs and Microsoft Office have made life difficult. Most city departments still prefer Office.

The Los Angeles Police Department will continue to use an on-premises email system, Reneker added, to ensure compliance with California Department of Justice requirements.

Reneker credits his predecessors in the Los Angeles Information Technology Agency for making a bold move, even though there were unforeseen obstacles and some erroneous assumptions. He said Gmail "significantly" reduced total cost of ownership for the city's email, even though the extent of the savings hasn't been what was forecast in 2009.

/ **MATT WILLIAMS**

STEVE RENEKER WILL REBID L.A.'S EMAIL CONTRACT.

JESSICA MULHOLLAND

No more QR

THE ORIGINAL STORY: In 2008, the small town of Manor, Texas, began using free QR code technology to provide information to residents and visitors. The town — located in the Austin metro area and the setting for the 1993 film *What's Eating Gilbert Grape* — was believed to be the first local government to use QR codes for this purpose.

The town affixed 24 QR code signs to landmarks and structures throughout the community. Aided by downloadable, free software for mobile phones, users could scan a QR code, which then directed them to a website for more information.

The project was spearheaded by the city's 22-year-old CIO, Dustin Haisler, who told *Government Technology* in 2009 that he discovered QR code technology while looking for a way to streamline Manor's filing system. He viewed the QR code project as an economic development tool, designed to appeal to workers at Austin-area technology firms.

PROJECT UPDATE: Manor's commitment to QR codes faded with changes to city leadership, but Haisler says the pioneering deployment had a strong influence on other local governments. When Haisler left the city in 2010 for a job in private industry, City Manager Phil Tate continued the QR code program until he retired. The new city manager opted not to continue the initiative, said Haisler, who is now president of a California-based tech startup. Although the program hit a

WHILE QR CODES ARE NO LONGER USED BY MANOR, THE INITIATIVE BROUGHT BIG ATTENTION TO THE SMALL TOWN.

codes for Manor, Texas

roadblock in Manor, the town's former CIO continues to believe in the value of QR code deployments.

"The benefits were around tourism and transparency," Haisler said. "Historical markers (and other city landmarks) had QR-codes affixed and linked to online descriptions, photos and movies that contained more information. The transparency aspects were around city projects, which contained links to a website with up-to-date information on the project, completion date, etc."

He added that Manor's groundbreaking project inspired new ways to make information accessible for citizens. "Today there are countless examples of communities using QR codes for a variety of purposes," he said. "It's been very cool to watch how they have spread from inventory tags to landmarks to full marketing campaign vehicles."

/ JUSTINE BROWN

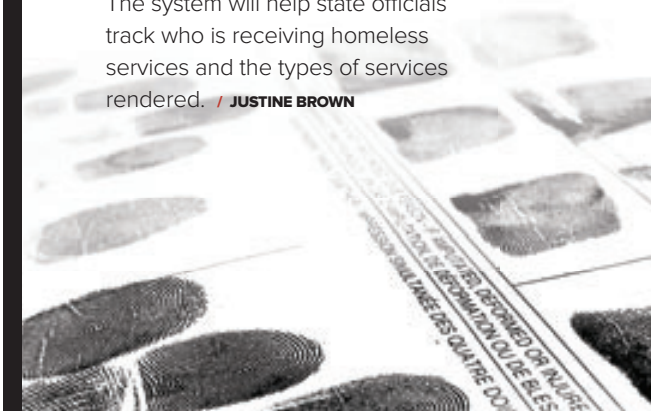
New Jersey county's fingerprint identity program spreads to the state

THE ORIGINAL STORY: In 2010, Bergen County, N.J., began scanning the fingerprints of people coming to its food banks. The new technology was meant to solve a dilemma the county had dealt with for years: Its Department of Human Services (DHS) could not accurately estimate how many homeless individuals received services like food, medicine and shelter. Because many people served by the department did not have accurate forms of identification, DHS staff had no way to track who was receiving services or how often.

"It's not like you can do a head count," said Susan Nottingham, the department's Homeless Management Information System administrator. "We could sit down and say, 'Can we talk to you for 45 minutes?' But we didn't want them to turn around and say, 'We're not that hungry.'"

PROJECT UPDATE: Bergen County's fingerprint technology appears to be working as intended, and use of biometric identification is spreading to the state level. County officials say the technology improved both the accuracy of records and the speed in which people receive food. The Bergen County DHS now has a more accurate account of the number of people in the system and the real demand for services. With this information, officials have been more effective in getting state and federal funding for homelessness programs.

The county system also inspired state officials to phase in a similar tracking system for homeless services. In April 2013, New Jersey began using a new biometrics data management system that includes a Web-based fingerprinting component to track and manage food, shelter, medicinal services and other necessities the state provides to its homeless population. The system will help state officials track who is receiving homeless services and the types of services rendered. / JUSTINE BROWN



Progress is mixed on multistate cloud storage initiative

THE ORIGINAL STORY: In December 2011, *Government Technology* wrote about a promising effort by four states to collaborate on cloud data storage. Seeking to cut the cost of housing GIS data, the states joined together to investigate the possibility of a cloud-based storage initiative. "We're wondering if there isn't an opportunity to aggregate the volume, drive some costs down and work more cooperatively," said Dugan Petty, who was Oregon CIO at the time.

Government Technology reported that in 2010, Oregon, Utah, Colorado and Montana asked vendors for input on how to store GIS data from multiple states in the cloud. After producing a request for information in December 2010, they worked on an RFP with the Western States Contracting Alliance (WSCA), which facilitates multistate purchasing.

PROJECT UPDATE: In some ways, the project has proceeded more slowly than hoped, and in other ways it has expanded. Paul Stembler, cooperative development coordinator for the WSCA-NASPO Cooperative Purchasing Organization, said that shortly before the RFP went out to vendors, the states asked to expand the scope to include other types of data such as video from traffic and CCTV cameras. "Basically the contract was reworked so that there was a band for GIS and a band for general cloud services. And the vendors could respond to either or both." The awardees, selected in 2012, were Dell, Dewberry, Esri and Unisys.

Stembler said many other states and public-sector organizations have shown an interest in participating. "As of now, we have participation addendum agreements signed by Hawaii, Iowa, the University of Maryland, Montana and Utah," he said. "They are working on it in Colorado, Oregon and Washington, as well as Missouri.

"Negotiating the deal did take longer than most contracts, not because it is IT or cloud, but because this is a space we have never dealt with before," Stembler added. "Anytime we are opening up a new area, we want to make sure we are asking the right questions."

But if the contracts are getting signed, apparently the data is taking longer to actually get into the cloud. Kyle Hilmer, director of IT planning and strategy for Montana, said the state is preparing to put data in the cloud but has moved slowly for a couple of reasons: "First, we had a change of CIO in February and he hasn't had a chance to review this yet. We also had our GIS leader for the state retire, and we haven't replaced him."

Montana signed addendums with three of the four vendors but still has issues to work through with Esri about terms and conditions. "We targeted GIS because it was a massive amount of data and the risk is minimal," Hilmer said. "All of the states thought we would be further along than we are. The negotiations took much longer than we thought. And with change in CIOs in several states, there was no way around the delay."

/ DAVID RATHS


Cloud Cooperative

Utah's hybrid cloud dissipates

THE ORIGINAL STORY: As early as 2010, Utah CIO Steve Fletcher was pitching the idea of a "hybrid cloud" that would offer state agencies, local governments and schools a package of software, platform and infrastructure services built upon a mix of state-hosted services and commercial products. The offerings were to be hosted within the state's newly consolidated data center. Fletcher saw the "hybrid cloud" as the wave of the future, allowing governments to pick and choose a solution.

In a January 2010 interview with *Government Technology,* Fletcher said that as many as eight Utah cities had expressed interest in joining a state-hosted cloud. At the time, Utah's Department of Technology Services was defining a package of hosted services that could be offered to these customers, Fletcher said.

PROJECT UPDATE: When 280,000 Social Security numbers were pilfered last year from a Utah Department of Health server, the incident forced Fletcher out as CIO — and effectively killed his vision for the state's IT future.

Utah finished consolidating its cabinet-level agencies into a single data center, which is saving millions of dollars, said current Utah CIO Mark VanOrden. But the hybrid cloud project fizzled. Utah now has the capacity to sell hosted services, VanOrden said, but "very little of this has happened." He cited "political reasons" as one obstacle.

"I would say that Steve's vision did not get off the ground like he had hoped it would," VanOrden said.

/ MATT WILLIAMS

CIO turnover complicates shared UI system projects

THE ORIGINAL STORY: After the Great Recession stretched several state unemployment insurance (UI) systems to the breaking point, the U.S. Department of Labor awarded grant funding to study the feasibility of creating shared unemployment insurance systems that could be used by multiple states. Some of the initial funding went toward writing requirements that lay the groundwork for states to work together. That was followed in September 2011 by the award of $128 million to three consortia of states that plan to share UI systems.

The consortia are arranged geographically. Arizona, Colorado, North Dakota and Wyoming are working together, as are Georgia, North Carolina, South Carolina and Tennessee. A third consortium is also starting among Maryland, West Virginia and Vermont.

PROJECT UPDATE: The three consortia are in different phases of work on the shared UI systems. Colorado's website notes that WyCAN, the Western multistate consortium, has named Colorado the lead state, making it responsible for overseeing system design to ensure the reusability and interoperability of the platform. The contract for design and building the new infrastructure was awarded to HCL America.

Another group's story illustrates the challenges involved in a multistate effort. Jeff May, CIO of the Georgia Department of Labor, said that the Southeast project called SCUBI (Southeast Consortium for Unemployment Benefits Initiative) has identified a vendor and is in final contract negotiations. But May says it has been "exponentially more difficult" to negotiate and pull together a multistate deal than if his state were working alone.

"There has been significant turnover in CIOs in several of the states," said May, who has been in his position for slightly more than a year. "And this is such a detailed project that it takes time to get up to speed. I have just part of the project on my desk now and it is three binders full of documents. Replacing a system in one state is hard enough, but this multiplies that times four."

May said he does like the concept, however, and looks forward to the synergy that will allow state systems to talk to one another. The biggest lesson learned, he said, is to stay patient. "During a time of stretched budgets and competing priorities, it is a challenge to get people to make the time commitment to work on something that will come to fruition three years down the road."

/ DAVID RATHS

New York City surveillance 'dashboard' is set to grow

THE ORIGINAL STORY: Last August, New York City officials revealed a next-generation situational awareness platform being used in the city's Lower Manhattan Security Initiative Command Center. The software, called the Domain Awareness System, was the city's attempt to build a truly one-stop shop for crime and counterterrorism data that's accessible in real time to police officers and other law enforcement personnel.

Built by the NYPD with technical assistance from Microsoft, the system used predictive analytics and data from multiple city sources — license plate readers, radiation detectors, 911 call information, public and private surveillance cameras, criminal records and incident reports — to create a single dashboard tailored for police work. The information is presented visually on maps and organized chronologically.

PROJECT UPDATE: The Boston Marathon bombers also planned to set off explosive devices in Times Square, and New York City's surveillance camera network might have helped stop their plans, had they traveled there.

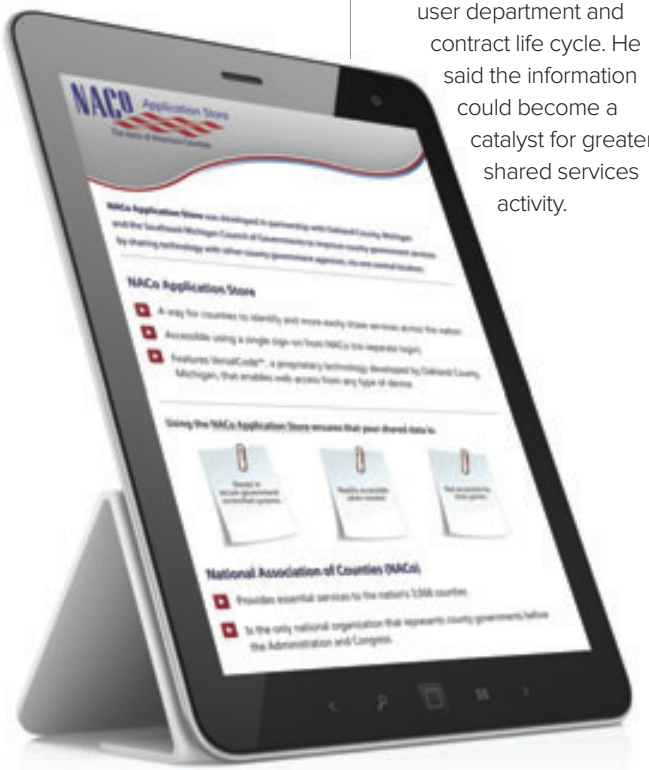
The city's Domain Awareness System, nicknamed "the Dashboard," collects data from thousands of surveillance cameras and intelligently flags suspicious behavior. It's designed to notify officers in the vicinity immediately if, for example, a person leaves a package or bag unattended on the sidewalk. The network integrates facial recognition technology and can search for people with specific traits, such as those wearing a certain color of clothing. / MATT WILLIAMS

NACo application store takes shape

THE ORIGINAL STORY: In 2012, Oakland County, Mich., teamed with the Southeast Michigan Council of Governments and the National Association of Counties (NACo) to announce a national shared services computing initiative. Over the years, Oakland County has provided shared computing services to 62 local jurisdictions with its regional G2G Cloud Solutions program. With the new partnership, NACo sought to leverage that shared services model into a national system. NACo's Application Store was envisioned as a cloud-based app library that would allow NACo members to share government-solutions knowledge across traditional organizational borders.

PROJECT UPDATE: The Application Store was formally launched in March 2013, offering access to Oakland County's suite of G2G apps. Since then, the platform has been adding information from other counties. So far, 16 counties have entered application data in the system, and 40 counties have accessed the system to use data, said Bert Jarreau, chief innovation officer in NACo's County Solutions and Innovation Department.

Oakland County CIO Phil Bertolini said the Application Store is an effective way for government executives to learn about applications that are in use by other jurisdictions. The store's database contains information such as vendor name, hosting location, user department and contract life cycle. He said the information could become a catalyst for greater shared services activity.



"The hope is that shared services will be used when appropriate, and they can take advantage of increased negotiating power of the larger group," Bertolini said. "There is also the potential for negotiation of shared application maintenance and upgrades."

G2G Cloud Solutions currently has 51 entities using its services, with five more coming onboard soon. Since Oct. 1, 2012, those customers have used the services to take in more than $2.6 million in online payments, Bertolini said.

Although the current Application Store is more of a library of application information than an actual app store, Jarreau said it will evolve. "There are other counties around the country like Oakland County that can offer software services to other counties. We called it an application store because we really intend it to be one someday."

First, NACo is working on getting member counties to list all the applications they use and vendors they work with. "Our goal is to have 100 counties enter their data by August after our annual meeting in July," Jarreau said. "We want to add a document management system so people can add RFIs and RFPs so that people can share ideas. That will create a real knowledge base."

/ DAVID RATHS

California County Tries to Roll Out Wireless Broadband to Farms

THE ORIGINAL STORY: In July 2012, *Government Technology* wrote about a coalition of federal, state and local interests, including Fresno County, working to secure high-speed wireless broadband to take California's San Joaquin Valley agricultural sector to the next level. Wireless broadband would allow farmers to put moisture sensors into the soil beneath individual trees, like olives and almonds, so that each tree gets exactly the right amount of water. Wireless technology also would allow farmers to incorporate GPS into their operations.

PROJECT UPDATE: In the year since the story appeared, the players working to develop an "ag-tech cluster" around Fresno have continued to collaborate on bringing together sources of innovation. Fresno was already one of six cities receiving assistance from the federal government's Strong Cities, Strong Communities Initiative, which is designed to help ramp up economic development by supporting community programs. In addition, Fresno is participating in the IBM Smarter Cities Challenge. IBM researchers noted that the city already had access to super high-speed Internet, but that many businesses in the downtown area aren't taking advantage of it, said CIO Carolyn Hogg, so one short-term goal is to increase those businesses' digital presence.

Rachel Audino, government affairs manager in the Office of Community and Economic Development at California State University, Fresno, who leads the San Joaquin Valley's broadband consortium, said the group is working to identify an agricultural pilot site to study broadband-enabled technologies

that will promote water-efficient farming practices in the region.

"We went to the World Agricultural Expo in Tulare, Calif., and talked to farmers about their needs and expectations," she said. "There was definitely a lot of interest and some existing technology use. Some farmers are now using GPS-enabled tractors that have increased furrowing efficiency by 7 percent. They want to work on the same kind of efficiency gains around watering."

Robert Tse, a community planning and development specialist at the U.S. Department of Agriculture, said that to further develop the ag-tech sector, the region needs to have a source of innovation much like Stanford University is a source of innovation for California's Silicon Valley. He said a memorandum of understanding has been created between the USDA and the U.S. Energy Department to work together on applications of technology related to water usage and the use of wireless broadband.

In August, the San Joaquin Valley Regional Broadband Consortium planned to hold an agriculture technology showcase in Fresno where researchers will present their ideas to entrepreneurs and venture capitalists. "The hope is that they will follow up and commercialize the technology," Tse said. A Central Valley Business Incubator already exists to host such businesses.

/ DAVID RATHS

Chattanooga's gigabit Internet service draws entrepreneurs

THE ORIGINAL STORY: Chattanooga calls itself The Gig City — in reference to the fiber-to-the-home network built across 600 square miles of Chattanooga and surrounding Hamilton County. Chattanooga's municipally owned utility, EPB, built a fiber-optic grid with up to 1 gigabit-per-second service now available to all businesses, residences, and public and private institutions. The network has the business community dreaming big, with aspirations of becoming a Silicon Valley of the South. In April 2012, then-Mayor Ron Littlefield told *Government Technology*: "Here is a community with a Southern quality of life, has a pretty good university, has a lot of amenities, and once was the dirtiest city in America. And now [it has] this great technological tool that we can use to build a future."

PROJECT UPDATE: EPB's original purpose for rolling out a $300 million fiber-to-the-home network was to create a far more efficient electric grid. EPB spokeswoman Danna Bailey said the utility can point to several improvements from that smart grid investment. "We are seeing reductions in outage minutes because of real-time monitoring," she said. "On Jan. 14, 2013, a huge tree fell on a line. Because of the way we can identify outages and reroute power, customers lost power for only three minutes."

Bailey said the network's subscriber base has grown to approximately 50,000 residential and 4,500 commercial customers. The utility has increased the network's base speed from 30 megabits per second to 50 Mbps. That is 10 times faster than average residential rates, she said. "We also reduced the cost of the gigabit service from $350 to $300 per month."

J.Ed. Marston, vice president of marketing and communications for the Chattanooga Area Chamber of Commerce, said the fiber network gives Chattanooga a recruiting edge. "Some companies are interested in the data infrastructure and others such as manufacturers are interested in the smart grid," he said. "Many power-sensitive organizations have dual feeds to guarantee they have power if one source goes down. EPB has a way to do that virtually now that obviates the need to have those two feeds.

"We see the fiber network invigorating the entrepreneurial scene," Marston added. "We have GIGTANK, the world's only business accelerator on a fiber network, and the Chamber's INCubator, which has 20 tech companies and a 91 percent success rate."

Sheldon Grizzle, who runs the GIGTANK accelerator, said the entrepreneurial community has rallied around the fiber grid. "It is a huge thing for us," he said, pointing to a Florida-based startup called Banyan that relocated to Chattanooga after using the GIGTANK last year. The company created a platform for scientists around the world to collaborate to find cures for diseases. "They came from Tampa last summer and really embraced the platform the city can offer, including our mentor network," Grizzle said. Although the company founders went home when their GIGTANK program ended, they soon returned to Chattanooga permanently, saying they lost momentum when they left, according to Grizzle.

"They could have located anywhere or worked for any tech company, and they chose Chattanooga," he said. "So I think we are making phenomenal progress, although there is always room for improvement."

/ DAVID RATHS

Google Apps power a culture shift in Wyoming

THE ORIGINAL STORY: Two years ago, Wyoming surprisingly became the first state to roll out Google Apps enterprisewide, showing that the cloud isn't just for big cities.

Gov. Matt Mead unveiled the new solution in 2011 at a news conference, announcing that 10,000 state employees had been shifted to Google's cloud-based email and productivity suite. Mead said the new tools would improve communication and collaboration, and provide better storage capacity and cybersecurity protection. State officials predicted the hosted solution easily would save $1 million annually.

PROJECT UPDATE: State CIO Flint Waters said the state comfortably made its savings target, cutting email costs by more than $1 million per year. But the biggest benefit, Waters said, is a "significant cultural shift in how we capture creative thought."

With Google Docs, state workers can collaborate on documents in real time, a process that's cutting approval and processing time. The new approach is required when an agency submits a business case to the state's IT department for approval, although Waters conceded that many of Wyoming's agencies have retained their legacy workflows internally.

Mead recently released his energy policy on a Google Plus Hangout. Soon Wyoming will save $1.3 million a year by decommissioning its legacy Tandberg video-conferencing solution, Waters said.

Google and Wyoming are finding ties elsewhere too. The company is helping the state develop a SourceForge-style engine for software development, and has added new functionality to Google Apps for Government when the state has requested it, Waters said. Next up, Wyoming is adopting Google Apps Vault for records retention.

/ MATT WILLIAMS

Minnesota and St. Paul move in together

THE ORIGINAL STORY: Early last year, *Government Technology* reported that the Minnesota Office of Enterprise Technology had moved almost 40,000 workers to Microsoft Office 365 for email services and collaborative tools under an enterprisewide service agreement that the state signed with Microsoft in 2010. Minnesota was the first state to fully deploy Microsoft's cloud-based Office 365 product, according to the company. Shortly after that announcement came word that the city of St. Paul would share the state email system and was in the process of transferring more than 3,000 city email accounts to the Office 365 platform.

PROJECT UPDATE: The project appears to be paying off for both Minnesota and St. Paul. State agencies have used the cloud-based platform — dubbed Enterprise Unified Communication and Collaboration (EUCC) by the state — for about a year and a half. The custom-built, cloud-based system integrates Office 365 tools such as SharePoint and Lync.

According to the Minnesota Office of Enterprise Technology, the EUCC is being used by more than 70 agencies, commissions and boards. It gives users new features like the ability to co-edit documents in real time, conduct tutorials by sharing desktop access with colleagues across town and actively participate in meetings while away from the office. Gov. Mark Dayton and other key officials can share information statewide with a single email post and coordinate activities in times of crisis.

"MN.IT continues to work on quantifying the long-term cost savings of this initiative," said Tarek Tomes, assistant commissioner of Customer and Service Management. "However, the benefits from system improvement, new communication and collaboration capabilities have been substantial, allowing interagency collaboration on an unprecedented level."

As of June, the communications platform had brought in more than 47,000 Exchange mailboxes and provisioned 35,000 SharePoint users, including external customers such as the city of St. Paul.

Cindy Mullan, St. Paul's deputy CIO, said the state and the city knew from the start that moving together into the cloud would be a high-profile project with little room for error. She credits disciplined project management and teamwork between city and state tech staff for moving the project along. One key decision that helped, she said, was splitting off the most challenging work — email archiving — from the rest of the project. St. Paul expected to have access to the state's archive system beginning in July.

Mullan said St. Paul also is saving money with Office 365. The cost per seat for the city's 3,270 email boxes has gone from $56 a year to $43. GT

/ MATT WILLIAMS

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Game On!

Gaming mechanics are changing how people engage online and in real-life activities — can they remake government's relationship with employees and citizens?

In Stockholm, a speed camera lottery encouraged safe driving by entering those who obeyed the speed limit into a lottery pool funded by drivers who had been fined for traffic violations. In a three-day demonstration, traffic speed decreased 22 percent.

The speed camera lottery worked because people like money, but more than that, it worked because games can be more satisfying than real life. In a game, the rules are clearly defined, there's an obvious goal and one's progress can be measured in definite terms. By learning the rules, honing one's ability to play the game and not giving up, victory is assured, eventually. Life, conversely, is often confusing and difficult. The goals of life are often unclear, one's progress can be difficult to measure and the rules always seem to be changing.

By Colin Wood
Contributing Writer

SHUTTERSTOCK.COM/TOM McKEITH

Players of the online role-playing game World of Warcraft have collectively spent more than 6 million years playing the game. Gamification was born through the realization that a person will spend thousands of hours playing a computer game to earn a digital representation of a purple sword. By applying elements of behavioral psychology and gaming to business, it was discovered that the same drive to participate found in the game player could be brought out in customers and employees. Research firm Gartner predicted that "by 2015, 40 percent of Global 1000 organizations will use gamification as the primary mechanism to transform business operations." Gamification, whether by using something as simple as virtual badges or as complex as an entire game, offers a framework for encouraging desirable behavior.

And gaming principles are being included in different projects both inside and outside government. A mock stock market in the United Kingdom brought new ideas that spread throughout the government's largest federal agency. Gamified systems are used to motivate people to learn online, exercise and volunteer their time for medical research. Officials in one Florida county government agency are planning a suite of gamified systems that will change their approach to community outreach.

When correctly applied and carefully nurtured, gamified systems can get people interested and participating.

In the 1920s, psychologist B.F. Skinner invented the now renowned operant conditioning chamber, or Skinner Box, to test and affect the behavior of rats. By pressing a bar, a rat got a snack. Then, pressing the bar twice lit a light, which granted a snack. Progressively, the rat was conditioned to press the bar up to 100 times before a snack was dispensed. Though the comparison may be discouraging, Jonathan Wallis, associate professor of psychology and neuroscience at the University of California at Berkeley, says this is basically how gamification works with humans.

Wallis, who also advises startups that use gamification, said one of the things that makes games fun is their shortened feedback loop. The payoff for doing good things in real life is usually delayed at best and, more commonly, nonexistent. Games tell the player what needs to be done and then reward the desired behavior immediately. "Figuring out what a goal is, that's hard work," he said. "You have to think about it, there's creative input and back and forth. You can't gamify that kind of thing. Instead, gamification works for elements of your life that are very concrete and well defined."

For something like losing weight, a subject Wallis researches, gamification works well because both the goal and the route to success are obvious. One of the tricks games use, he said, is hiding how much work something is. For instance, telling someone they'll need to run 120 miles to prepare for a marathon might make them quit before they even start training. Games break the work into smaller increments and provide feedback or reward along the way.

Gamification can achieve great results — the hard part is designing the game correctly.

If gamification can lead to innovation in U.K. government — and it did — then it can work almost anywhere, said James Gardner, general manager of Spigit and former chief technology officer of the U.K.'s Department for Work and Pensions. "You do not expect a great deal of innovation in the British Civil Service," Gardner said. "There are probably people in

Government's Got Game

In Miami-Dade County, Fla., officials are looking to create gamified systems to be proactive about engaging the public. The county doesn't want to wait for feedback to find out what it could be doing better, said Assia Alexandrova, e-government solutions manager for the Community Information and Outreach Department, and it's using game elements for several pilot projects.

One project is a website that pits the nation's 311 services against one another in a friendly competition. By comparing major cities' 311 service offerings and displaying the results in a simple and fun way, Miami-Dade can offer its citizens a point of reference for how well the county is doing.

"Which can be either good or bad," Alexandrova said. "If we're losing the competition, it's not going to be good publicity, but if we're doing well, the community sees we're running a good operation. Usually these numbers are presented in some PDF report somewhere; they're not exposed in plain language. So it's really hard to figure out what's going on unless you have technical knowledge of call center operations."

Another idea the county came up with is gamification of the business start-up process. The idea is to make the procedure easy to understand, while providing all the usual gamification elements throughout the process like progress bars and social components. Any process the county is responsible for that has to do with engagement or educating the public, Alexandrova said, is a good opportunity to use gamification.

Miami-Dade County also plans to integrate gamification elements into its Web portal to increase engagement and get input from citizens on why they aren't using it as much as they once did and how it could be improved.

The main hurdle to getting these projects running, Alexandrova said, will be getting them working without having critical mass. They don't have funding for these ideas, so they will have to start small, be creative and focus their efforts on the most active members of their community, she said.

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that organization who have not discovered Britain no longer has an empire."

The Work and Pensions Department is the U.K.'s largest government agency, with more than 135,000 employees. But Gardner began small with his idea, which he called Idea Street. "We deployed it on a limited basis in central London, but it spread like wildfire throughout the whole department," he said. And it's still in use today, nearly four years after it was introduced in late 2009.

Idea Street was created as a market where employees could suggest ideas for changes in the workplace, big and small, and others could trade stock in those ideas. On top of that was a system of game dynamics that encouraged participation. The agency wasn't allowed to pay employees extra for winning or participating in the idea market, but it didn't need to, Gardner said.

Employees discovered that they liked the game, having an outlet for their ideas, and most of all, the recognition that came with winning. A public leaderboard showed who was doing well on Idea Street, giving the winners de facto status in the organization. "I hadn't realized before joining the Civil Service how extremely important status is," Gardner said. "It turned out to be a most remarkable driver of outcomes."

Department officials weren't sure what to expect from the program, Gardner said, but after a couple of years they realized the suggestions and ideas coming from Idea Street were mostly small adjustments to how things worked. "These things, when they started to add up, were turning into quite a lot of money," he said. "Small changes have a disproportionate impact when you do a thousand of them."

Like recognition, some of the most effective rewards are free and more valuable than money, said Rajat Paharia, founder of Bunchball, a company that provides gamification software for businesses. For instance, members of a Black Sabbath fan club, if offered a choice between an exclusive sneak preview of an upcoming album and $100, would almost never take the cash. "They want to be the ones that know something no one else knows, get behind the velvet rope, be able to share it with the world and be a hero," he said. "In that case, exclusive access is worth more than dollars."

There are a few key drivers for a gamified system and to be successful, someone needs to identify what motivates people in an organization and build a system around that motivation.

"They might not care about reputation or status, and they might care a lot about dollar value stuff — or it might be the other way around," he said. "Whether consciously or unconsciously, whenever we engage in any kind of system, we ask, 'What's in it for me?' And if there's not a good answer to that question, we won't engage, or not for long."

Educational website Khan Academy began in 2006 simply as an index of educational videos, but today it has grown to a gamified community of more than 10 million students. High-quality content is important for any project, which Khan Academy has, but the website began to draw serious traffic and retain users once features like badges, achievements and social media were integrated into the design.

Zamzee, a website and device that encourages physical activity in children and families, has evidence to suggest that gamification can help boost exercise. A six-month study and 12 clinical trials showed that Zamzee's gamified system increased physical activity among its users by 59 percent.

And a computer game and website called Fold.it uses the data collected by game clients on users' computers to help with disease research. The game, in which participants fold proteins, helps with research connected to HIV/AIDS, cancer and Alzheimer's disease. Fold.it creators are trying to see if its tens of thousands of users can solve certain puzzles better than computers can.

Doing long division, jogging and folding proteins aren't the first things that spring to mind when most people think of the word "fun," but gamification has found ways to increase the popularity of all three. And it can do the same for the workplace, said Gamification Corp. Founder Gabe Zichermann. "There is no reason why work shouldn't be a thrilling experience," his website says.

The three core assets of gamification are "feedback, friends and fun," Zichermann said. "Fun is a little more difficult in the government setting, but nonetheless something to strive for." And the four things that drive participation are "status, access, power and stuff," he said. Getting all these features balanced correctly is a matter of careful calculation that depends on the organization.

Mainstreaming Gamification

Gamified marketing techniques have become so common and subtle that many people may have participated and not even realized it. NFL.com offers its users points for watching videos and reading articles, which can be redeemed for coupons to use at the NFL Rewards Store. Amazon.com gamified its product ratings system when it began offering its best product reviewers badges and a spot on the Top Reviewer Rankings leaderboard.

American Express has been listing "member since" on its cards for years, and airlines have been offering frequent flyer miles since United Airlines launched the idea in 1972. Loyalty programs and tokens of appreciation for customers aren't new ideas, but gamification is an evolution of the concept as it's applied in new ways.

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In fact, the wrong type of engagement could produce a negative result. "[311] apps without gamification actually make the city government's relationship with the citizens worse, because they provide an instant feedback tool without an instant solution loop," Zichermann said. The positive feedback needs to come from the app, not from the pothole getting fixed, he said, because by the time the pothole is fixed, the person who reported it is no longer as strongly connected to the event.

Something as simple as a virtual badge or tokens is enough to give people an immediate incentive to continue participating, he said, but you can't leave users hanging for weeks and expect continued participation. Users want to see continuous progress along the way so they can feel emotionally secure about the entire endeavor.

Internally, gamification can offer revitalization in government, Zichermann said. "People can't be expected to do the same thing every day, day-in day-out for 20 years with the same level of enthusiasm," he said. "Many people who go into government start off with a tremendous amount of enthusiasm, but the lethargy of government can become demotivating. Gamification is very good at bringing those concepts of motivation and engagement back to people who may have lost connection with their job. And the corollary of that is that if government agencies want to attract a young, change-driven generation, mainly the millennials and Gen Y, they're going to need to gamify in order to make and keep the work interesting for those folks."

Gamification originally was recognized as a great way to engage, said Gartner Research Director Elise Olding, but it's evolving into more than that. Gamification is not something that can be installed and forgotten — it requires careful curation, but once that's realized, the outcome can be transformative.

"The tough part is looking at the work government is doing, thinking about how that work could be done better, and understanding the behaviors that are currently supported by the way metrics are happening or the culture," Olding said. "Then using game mechanics in a very specific way to encourage behavior change and also understanding that you have to continue to iterate once you get behaviors up to a point or you're going to get game fatigue. Gamification connects employees to business outcomes, but you're going to have to redesign that work." GT

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/ INFORMATION OVERLOAD

For local governments drowning in data, analytics offers a way to make sense of it all.

BY WAYNE E. HANSON
EDITOR, DIGITAL COMMUNITIES

ATTACK OF THE PETABYTES

IMAGINE A COMPLETELY Internet-connected world where humans are deluged with data and starved for information, where more than 70 percent of all email is spam, where cars, electrical meters, phones, computers, televisions, refrigerators, eyeglasses, traffic lights, sewers and even clothing are connected and busily sending and receiving data at the speed of light — or in some cases, at the speed of dialup. A world where social media information explodes, where national governments can scoop up every phone conversation, email, text message or photo, browse through social media, block access to "undesirable" information and attack critical infrastructure with incalculable sophistication. It doesn't take much imagination to conceive of such a place; it's happening today.

Can cities and counties survive the attack of the petabytes (1,000 terabytes), let alone find the exact information that can help make life better? Something big this way comes, and now nearly everyone can hear the thump of its heavy tread. In this time and in this place, analytics may be mankind's last hope.

All this data running rampant, if managed for good instead of evil, has the possibility of benefiting us humans in our pursuit of a better life. Yes, if Edward Snowden is telling the truth, every telephone call, email, text message and social media post can be scooped up by the National Security Agency and neatly archived. In fact, the NSA is building a $1.2 billion intelligence-gathering facility in Utah capable of collecting and storing zettabytes of data on everything moving through the air, wire or Internet. On the other hand, NSA Director Keith Alexander says that this mass surveillance has stopped some 50 terrorist attacks. Striking a balance between beneficial surveillance and privacy-robbing snooping figures to be the subject of a continuing national debate.

But because of its potential for good, big data — as this subject is called — has become more and more interesting to state and local governments. It creates a giant pot of data that can be sifted through to find things like leaking water or gas pipes, bird flu outbreaks, tax dodgers, sex offenders and dangerous intersections. Even more interesting is big data's potential to be predictive — spotting bridges that might collapse, determining which inmates probably won't reoffend if given early release, plotting where police should go to prevent homicides.

Collecting data isn't enough, of course, it must be examined, and sifting through these mountains of information manually isn't an option — there just aren't enough people around to do that. As computing power improves and analytics software becomes more sophisticated, these tools are being used to scour data for useful patterns, hidden correlations and other insights to improve decision-making.

ABOUT THIS REPORT

This report is based on the activities of the Digital Communities program, a network of public- and private-sector IT professionals working to improve local governments' delivery of public service through the use of digital technology. The program — a partnership between *Government Technology* and e.Republic's Center for Digital Government — consists of task forces that meet online and in person to exchange information on important issues local government IT professionals face.

More than 1,000 government and industry members participate in Digital Communities task forces focused on digital infrastructure, law enforcement and big city/county leadership. The Digital Communities program also conducts the annual Digital Cities and Digital Counties surveys, which track technology trends and identify and promote best practices in local government.

Digital Communities quarterly reports appear in Government Technology magazine in March, June, September and December.

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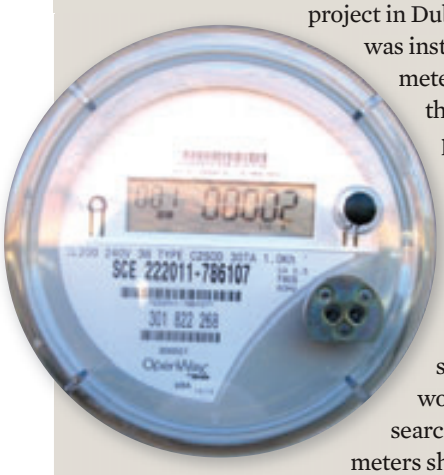
"The goal of analytics is not to have the decision disappear inside the computer," said Katharine Frase, IBM public-sector vice president and CTO, "the intention is to enable humans to make decisions with better evidence. In the case of the Watson system that played *Jeopardy,* you ask the system a question after it's been trained and it recommends some possible answers, with the evidence behind why it's making that recommendation."

To illustrate, Frase cited a water project in Dubuque, Iowa. The city was installing smart water meters and wanted to know the most effective way to present meter data to ratepayers. Essentially city leaders needed to know what type of data would prompt citizens to take action.



They assumed that some water customers would immediately search for a leak if their meters showed water flowing at 2 a.m. But many others wouldn't bother. Cost-sensitive customers would change habits to reduce their water bills if rates varied by time of day. But how large is that population? Ultimately one tactic that worked well was showing residents how their water use compared to their neighbors. It was somewhat competitive, and it got many residents engaged in conservation, resulting in an estimated 7 percent reduction in water usage.

Dubuque applied the same methodology to electric service — on the principle that "insight into usage patterns can provide the basis for more intelligent electricity consumption decisions," according to an IBM report.

The energy pilot gathered usage information through smart meters in 1,000 households and applied it to analytical algorithms running in the cloud, said the report. Residents could view information on the best way to minimize consumption during peak usage periods. Social networking helped residents compare power consumption patterns, and households employing the solution cut their electricity use by as much as 11 percent.

So when people talk about analytics, Frase said, they are talking about analyzing multiple forms of data to be able to predict what will happen and to prescribe the best response. "At the end of the day," she said, "it's humans in the city that actually take action, so how do you engage them in that activity?"

NEW YORK CITY GETS PROACTIVE

You have millions of trees that could drop broken limbs on the public. You have plugged sewers because some restaurants dump grease down the storm drain or the toilet. You have illegal construction creating fire hazards. So who do you call? If you're New York City Mayor Michael Bloomberg, you call Michael P. Flowers.

Flowers, a number cruncher in the NYC Office of Policy and Strategic Planning, is no ordinary geek. On a trip to Afghanistan, he saw how the military used analytics to predict where improvised explosive devices were likeliest to be planted. The experience prompted Flowers to start using analytics in the city. Last September he was named a White House Champion of Change for using analytics to help New York City tackle some tough problems.

WHERE TO BEGIN?

Most people think you fight fire with water, ladders and axes, and that's true. But what if you could stop fires before they ignite? That's the idea behind building inspections. But New York City has 20,000 complaints each year about illegal conversions of buildings — jammed with partitions, hotplates, extension cords and extra families —

/ EARLY ANALYTICS STOPS DISEASE

Using analytics to solve civic problems isn't new. In 1854, for example, cholera broke out in an area of London, eventually killing hundreds of residents. Doctors thought that cholera was spread by foul air. But one physician, John Snow, drew a map of the area and put a mark where each of the afflicted lived. Snow discovered that most of the sick individuals lived within a few blocks of the Broad Street public well, but there were some exceptions. He investigated the exceptions and found that some stricken children, who did not live near the well, attended school in the area and used the well. And some who lived near the well but were unaffected drank beer instead of water.

Snow took the addresses of London's cholera cases and did what today we might call "spatial analysis." Snow suspected that the water was somehow responsible; the pump handle was removed and the outbreak ceased. It was later found that a sewage pit beneath a house had overflowed into the well. The bacterium responsible for cholera was discovered — also in 1854 — but was not widely known until much later. So a simple analysis of data led to information and insight that not only saved lives in the 1854 outbreak, but also provided knowledge useful to cities throughout the world ever since.

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and only 200 inspectors. Each illegal conversion is a potential catastrophe, and illegal conversions are a large part of the 2,000 serious fires per year in buildings that house one to three families. How could the city prioritize the complaints so that inspectors would visit the worst buildings first?

Flowers and his team explained the process in a department video. They started with a spreadsheet and began adding data from different city departments. The city worked with all kinds of data to begin with, but four types of data were key, said Benjamin Dean, chief analyst in the analytics unit: unpaid taxes, an owner undergoing foreclosure procedures, buildings constructed before the building code revisions of 1938, and the neighborhood's socioeconomic status.

In the video, Deputy Assistant Chief Joseph Woznica of the NYC Fire Department said at first he didn't think it would work — there were too many turf issues and a lack of cooperation among departments to merge all this data. But those obstacles were overcome and the information was combined, enabling high-risk buildings to be targeted first.

A 13 percent vacate rate — meaning that the buildings inspected were so dangerous that they were unfit for human habitation — shot up to 70 percent when prioritized with analytics, a huge jump that astonished everyone, including Flowers. The result is that New York City can now target its limited resources where the problems are likeliest to be found.

That approach was applied in other areas too.

To locate restaurants pouring cooking fat into the sewers, the city correlated restaurant locations, a map of the sewer system, reports of calls for sewer clogs, and a list of restaurants with no contracts with companies that haul away waste cooking oil. That narrowed the focus down to a few suspects that could be targeted.

To locate areas where trees were likely to drop limbs on the heads of passers-by, the city correlated data on what trees had been trimmed and when, with data on calls to remove fallen limbs and uprooted trees. The results were used to target for trimming those areas with trees most likely to drop limbs. The data also revealed that trimming trees one year reduced calls the following year by more than 20 percent.

Besides turf issues, another challenge was data format. It's impractical to map millions of individual trees. But the city did have records of tree trimming and cleanup of downed limbs and debris, as well as reports of injuries. However, the records came from different departments — and where one department may have noted location by street address, another may have used city block designations. To combine big data into a useful analytics engine, the data formats must first be reconciled. New York City settled on city blocks as the designated location standard.

The city has a state-of-the-art big data and analytics methodology, and media reports of those successes have helped other cities incorporate analytics into improving safety, providing better services to the public and focusing on those things that give the most bang for the buck.

/ A New York City subway cop named Jack Maple began to map where crime occurred in the subway.

SHUTTERSTOCK

GETTING AHEAD OF CRIMINALS

The movie *Minority Report* — in which crimes were predicted and individuals arrested before they could offend — was science fiction. But CompStat is a method for predicting crime that really works. And it started in New York City.

Back in the early 1990s, a New York City subway cop named Jack Maple began to map where crime occurred in the subway by which stops, what time of day, etc. These maps, which he called "charts of the future" were written in crayon on 55 feet of butcher paper. The charts helped predict where and when crimes were likely to occur, so officers could be assigned accordingly. Between 1990 and 1992, they helped cut subway felonies and robberies by nearly one-third. NYPD Commissioner William

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Bratton later incorporated the system into all NYPD operations and today, police departments around the world use that system or some variation of it.

And while "charts of the future" use historical data to predict where and when crimes will occur with a great deal of success, gunshot detection systems bring analytics into the present, up to the second. The systems, in use in many metropolitan areas, locate a sound by triangulation, determine if the sound is actually a gunshot, and if so, provide GPS coordinates or an address, tally the number of shots, the direction the muzzle was pointing, if the shooter is moving or stationary, and can determine the number of weapons fired. This real-time data allows law enforcement to locate evidence or a victim within a few yards, and in some cases intercept the shooter.

Such systems also have a predictive value. Only about 20 percent of urban gunshots are ever reported to police by the public. So gunshot detection systems give a much more accurate indication of the number and location of shots fired. And thieves often test stolen weapons before selling them. For instance, a detection system in a large West Coast city detected many "confidence" shots fired over time at a high school athletic field, which enabled law enforcement to arrest the perpetrators, solve a number of weapons thefts and prevent potential crimes.

MIAMI-DADE PARTNERSHIP

Miami-Dade County, Fla., also is using advanced technology and analytics to prevent crime. Park cameras and facial recognition technology are used to spot known sex offenders in areas where there is no expectation of privacy, said Miami-Dade County CIO Angel Petisco. "So if one of these individuals happens to be near where children congregate, that will send a trigger to law enforcement and they'll visit that park."

Petisco emphasized that analytics tied to sensors can help government react not just to historical data, but can also enable near real-time adjustment to changing conditions. In the past, Petisco said traffic engineers might investigate six months of traffic flow data from a given intersection seeking patterns typical for weather, day of the week, time of day, etc. "However, with proper metering and sensors, that information can be done in real time," he said, "and now we can program our traffic controllers to respond — not to what happened over the last six months, but what's happening today, this hour, this second, this intersection. And that's a heck of a lot more valuable."

With a smart-valve analytics application, the county's parks director predicted that he could save Miami-Dade $1 million per year by quickly detecting and fixing water leaks. The actual savings were much higher, Petisco said. So now the parks department has money to open formerly closed pools and perform deferred maintenance, even though its budget has not increased.

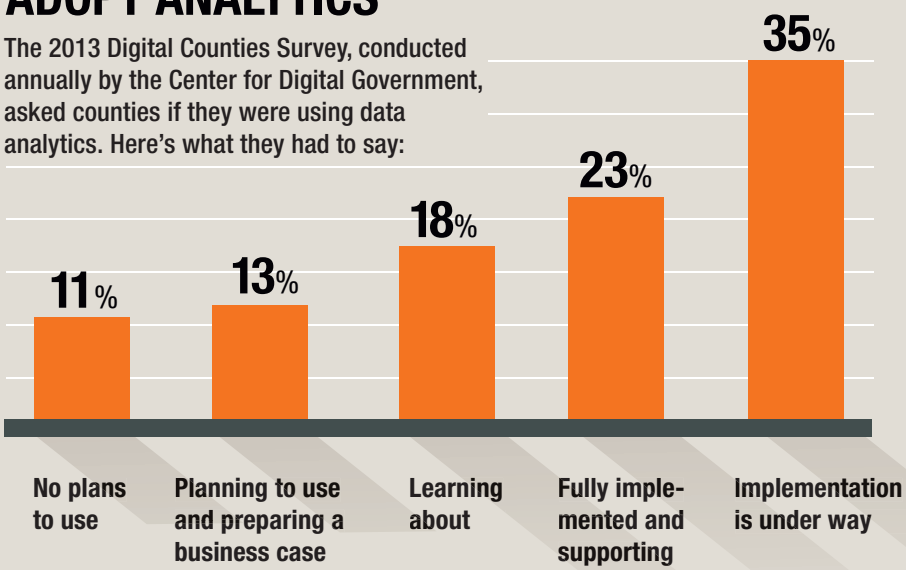
Data collection and analysis also can provide a real-time feed to the public, to yield some interesting cross-pollination for local government. In Miami's Brickell community, for example, the county, the Miami Heat NBA franchise and neighborhood businesses have teamed up to increase transit ridership, spur economic development and provide better access to Heat games.

Here's how it works: The county public transit agency has a mobile app called the Miami-Dade County Tracker that — in addition to fares, schedules, trip planning and so on — gives real-time information on the location of light rail trains and buses. Now the app is being expanded to connect public and private events to the trip planner.

"Say I'm going to a Heat game tonight," explained Carmen Suarez, division director in the Miami-Dade

/ COUNTIES ADOPT ANALYTICS

The 2013 Digital Counties Survey, conducted annually by the Center for Digital Government, asked counties if they were using data analytics. Here's what they had to say:



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Q&A: Communication You Can Count On

The Sprint layered approach to communications goes far beyond just interoperability

One doesn't have to look past the latest newspaper headline to know how critical the role of emergency responders is to the protection and safety of our communities. However, challenges, mainly when it comes to communication, often stand in the way of first responders performing their jobs effectively. Sprint is working to change that. In this interview, Scot Smith, industry solutions manager/engineer at Sprint, describes how an innovative layered approach to communications is providing emergency response agencies with more than just interoperability — and helping to revolutionize the way first responders collaborate and serve the public.

SCOT SMITH
Industry Solutions Manager/
Engineer at Sprint

Q: What are some of the communication challenges that emergency responders face and how is Sprint helping them overcome these issues?

SCOT SMITH: Emergency responders typically face these common challenges:

1. Limited range of primary land mobile radio (LMR) system. A public safety agency's primary communication system is designed for a specific geographic location, and the agency is limited to that range. Sprint has dispatch (push-to-talk, including one-to-one and one-to-many) communication capability on the Sprint network that helps reduce these limitations by acting as another layer to an agency's primary communication system.
2. Redundancy. What happens if the primary system goes down? Sprint can set up its network as a parallel system to an agency's primary system. This gives an agency a natural secondary system because its capabilities mirror that of the primary system.
3. Call traffic capacity. Private systems can have very limited capacity (or frequencies and channels). The Sprint parallel system allows agencies to take less critical traffic off their primary system and put it on the parallel system. This actually helps increase the performance of the primary system for the core users that need it most. However, you can't effectively offload this traffic if it is not tightly integrated into the primary point of dispatch communications. The Sprint network enables this integration with a focus on the core of each agency's network functionality. Because of this, the parallel system is reliable and used more frequently.

Q: What is so unique about the Sprint solution portfolio and its layered approach?

SCOT SMITH: Sprint is one of the only providers to offer this layered approach to communications. We also have 20 years of experience in the field and long-standing relationships with many industry-leading providers of dispatch console systems, which are the heart of dispatch command centers. The Sprint solution portfolio includes devices that integrate with many dispatch console systems, which means that our solutions tie into nearly every public safety dispatch center. The Sprint network has push-to-talk capability which provides instant communication.

Q: What is Sprint doing to help transform emergency response communications?

SCOT SMITH: Sprint is offering a solution that goes beyond just interoperable communications and gives customers a parallel dispatch network/platform. It is so much more than just dispatch and offers numerous capabilities to emergency responders. For instance, some of the devices that Sprint offers are smartphones with push-to-talk capability — they have the dispatch functionality that first responders are familiar with, but they also have the capabilities for video and navigation, among many others. These capabilities can benefit other verticals besides just emergency response, including health and human services, education, and parks and recreation. In the future, Sprint is expecting that all devices will be 4G LTE capable and have the backing of the robust Sprint network.

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County Information Technology Department. "The app will show me which restaurants I can get to from the AmericanAirlines Arena using public transportation that are offering coupons if I've attended the game."

"We're going to be gathering statistics in the background about all these things, which we will share with the private sector," she added, "and that will provide a wealth of information on how best to promote events, get people using public transit and more."

The project is a partnership between the county, the city of Miami, the parks department, public transit and businesses in the Brickell neighborhood — along with help from IBM.

The county's interest in this is increasing public transit ridership, said Suarez, which increases revenue. In addition, some businesses promote local parks and donate money for their upkeep. "A particular restaurant wants to sponsor movie night in a park," said Suarez, "and a percentage of their revenue that night goes to maintenance of that park." The app informs constituents about the promotion and also gives the public an opportunity to donate to the Parks Foundation.

"It's a very good way of getting and building economic development within a given area," said Petisco. "It really takes the government and the local community [and says], 'If you want skin in the game, then participate with us.' And what we're finding is where you normally get a certain amount of walk-in traffic, this is stimulating that economy and all of a sudden we're having a lot of folks on Friday nights congregating in this area. And that leads to crowdsourcing and a bunch of other things."

HOW TO START

If analytics sounds like something your city or county could use, how does one begin? According to Maryland Chief Innovation Officer Michael Powell, it's simple: All you need is some data and a lively sense of curiosity. And he should know, he's been in the analytics game a long time. Powell began working on Baltimore's groundbreaking CitiStat program back in 2001 and now heads Maryland's StateStat program under Gov. Martin O'Malley.

Most cities and counties have what Powell calls "single-purpose" data residing in databases and spreadsheets. The trick is to see what kinds of questions can be asked about it that will squeeze out additional value. "The first thing is to just take the data that you have, and sit down and explore it," said Powell. The process often leads to taking different sets of single-purpose data and comparing them.

Baltimore, for example, cracked down on unregistered rental properties by comparing two sets of single-purpose data. "In Maryland, if you have a rental property, you are required to register it," Powell said. He compared a rental registration billing database with a real property database that indicates if a property is owner-occupied or a rental. "I found that a large number of rental properties were not paying their rental registration," he said. As a result, the Housing Department started using the real property database to identify potential rental properties, and revenue increased more than half a million dollars per year.

Powell suspects that Baltimore is not alone in having untapped data. "The reality was most homeowners who were renting out their properties didn't know that they were required to register them. So we were able to increase revenues just by getting people into compliance. Nobody had thought to look at that before."

People with the technical skills needed to staff what Powell typifies as a "small, lean group of smart young

/ HOW BIG IS BIG?

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/ Maryland's StateStat dashboard shows progress on Gov. Martin O'Malley's 16 policy goals.

DAVID KIDD

analysts" aren't hard to find. Analytical thinkers can be found in economics departments or may have a degree in statistics.

"In my long experience doing CitiStat and then StateStat, we have a variety of people who were teachers and policy folks," Powell said. "I was a GIS person. For geographic analysis, the mapping part is not hard. It's making sure you have good data quality, and that you have curious people who have an understanding of the business."

By knowing what it's like to be a health or restaurant inspector, those tasked with data analysis can think of smart questions to ask when working with the data.

Now that many jurisdictions have 311 systems, said Powell, that data can be repurposed to stimulate questions and find solutions.

One concept that helps translate analytics findings to staff and residents is a "dashboard" — a list of goals, for example, and some quick way of communicating how the jurisdiction is doing with regard to those goals. Maryland's StateStat has O'Malley's 16 policy goals, with red, yellow or green indicators that signify progress toward each goal. Clicking on a goal brings up more detailed information about it and the analytics underlying it.

While the ease of interpreting a green, yellow or red marking is important from a transparency perspective, Powell said it's really only the tip of the iceberg. The real value of analytics is to drive deep conversations around specific issues. To illustrate, he outlined a state-level conversation focused on unemployment insurance.

"You sit the unemployment insurance people down and say, 'Show us what this stuff looks like.' And then you start asking questions like, 'Can we look at the difference between people who find a job within six months of receiving unemployment benefits and people whose benefits expire and they age out of the program? Can we look at the jobs people find and understand what industries they are moving into? Can we integrate that unemployment data set with a data set on education, and understand the education background of those who end up unemployed?' People don't think to ask those questions unless they explore the data that they have. This is the opportunity."

So how are such efforts funded? Try an innovation fund, where general fund money is set aside for innovative projects. When those projects succeed, a portion of the savings goes back into the innovation fund and the fund grows, fueling more projects. Powell, who maintains that the return on investment on such projects can be "staggering," said that's a very workable model.

Where does the rubber meet the road? "Curiosity," Powell said. "Take some data and put it on a map, and you might be surprised at what you find."

Beth Blauer, who wrote the *GovStat Program How-To Guide,* also cut her teeth in the Maryland StateStat program and is now director of GovStat for Seattle-based Socrata, an open data platform provider.

According to Blauer, the most difficult part of running such a program is "finding the will to simply get started." In other words, if the impulse to start an analytics program starts at the grass-roots level, it requires top-level leadership — the mayor, county executive or governor, for example — to put the data analysis into real action to solve problems.

To do that, said Blauer, tell a story. "I always bring an arsenal of stories." For example, she tells about what happened when foster home locations were mapped in Maryland and then compared to a map of where sexual offenders lived. They found "overlap."

"Or you take data around children who live in families that are eligible for supplemental food but are not receiving free or reduced-cost lunch," she said. "Those are data sets that are being generated for many different purposes and are not always coordinated in a way that will help solve a real-life problem." Doing so, said Blauer, gets action. "Political leaders say, 'OK, I get it! These are problems I'm trying to solve.'"

Open data seems essential to a robust analytics program, but Blauer said that "open to the public" is a default definition of "open data" that misses the point.

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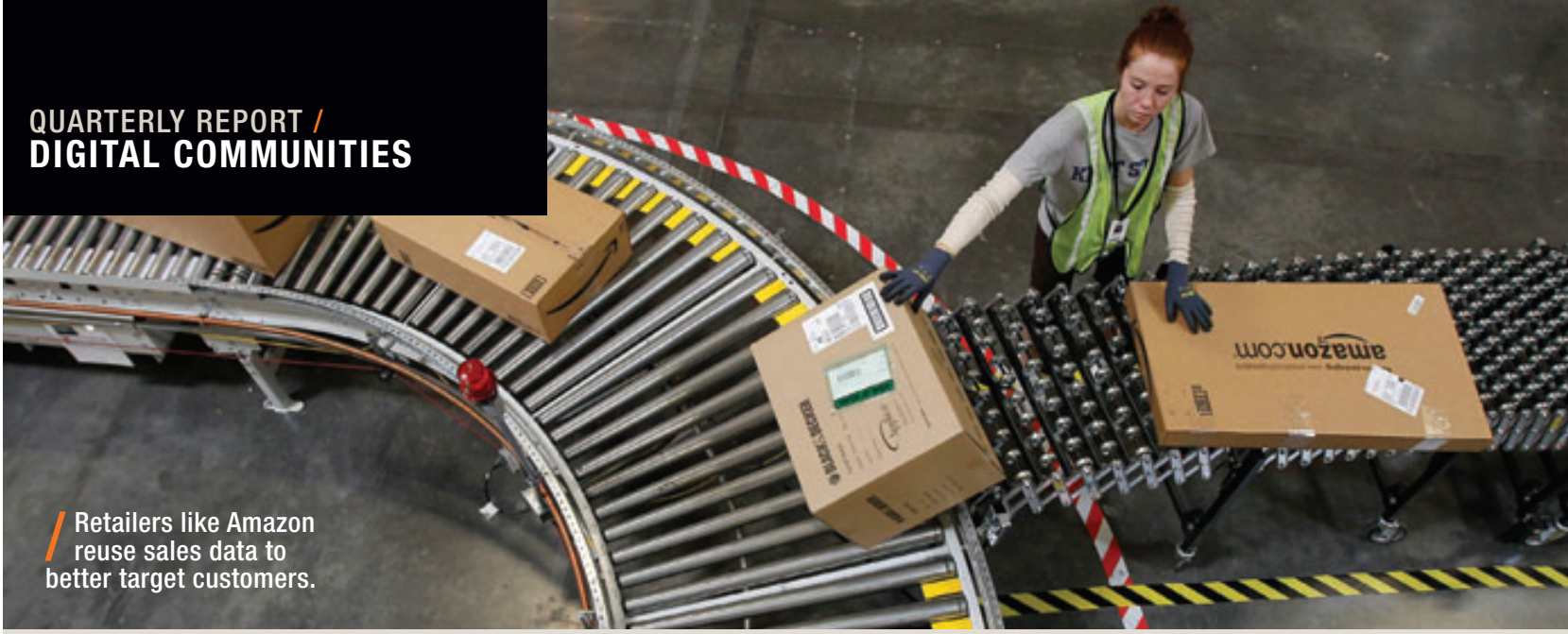

/ Retailers like Amazon reuse sales data to better target customers.

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Open data, she explained, is "freeing data so that it can be made actionable." That means data governance, data curation and comprehensive metadata that enables internal use. Then it can also be made available to the public. "Places like Chicago and San Francisco have used the data internally and then pushed it out to the public," she said. "The applications developed on that data are much stronger, much more reliable."

FUTURE OF ANALYTICS

Big retail stores like Target, Wal-Mart and Amazon reuse the sales data generated by brick-and-mortar cash registers and online sales. Buying a certain brand of laundry detergent may trigger a discount coupon for a specific brand of fabric softener, because analytics has shown that purchasers of one most often favor the other. Online searches for coffee makers may trigger ads for coffee makers when browsing other sites, purchasers of one book title "most often also purchased this book," and so on. Even patterns of heavy and light sales days help stores predict staffing needs.

"That's where analytics in government is going," Powell said. "We have data we've collected for specific purposes, like processing claims or enumerating crimes, and we're starting to see there's a bunch more value in that, which can answer questions that we don't even know we have. The first step is exploring it."

"TAKE SOME DATA AND PUT IT ON A MAP, AND YOU MIGHT BE SURPRISED AT WHAT YOU FIND.

Predicting things with analytics is likely to become more useful over time. Powell, for example, said it's possible to predict the risk that a parolee or probationer will reoffend. "It doesn't make sense to supervise every person the same," he said. "So we have built a statistical algorithm that says how likely they are to commit a crime while they are on parole or probation. We can classify different tiers of people that we supervise, and we supervise them differently based on what tier they are in."

While some risk is intuitive, analytics is starting to get much smarter, and subtle indicators that may be missed, even by experienced staff, are starting to be recognized by the algorithm. And that means better safety for the public and better allocation of scarce resources.

Some barriers to sharing and comparing different kinds of data are disappearing, said Powell. In the last 10 years, for example, the amount of digital data that's available to be queried has grown exponentially and likely will continue to climb. And compatibility barriers also are falling. Years ago, even a document in WordPerfect was unreadable without the program, and customized systems, relational databases, etc., required expensive data translation and extraction. But technology is solving those issues, and 10 years from now Powell expects those barriers to be gone, or at least of minor concern.

But one barrier to large-scale collection and analysis of data isn't likely to disappear soon: privacy, especially following revelations of the NSA's PRISM spying program. The safety and security of personally identifiable information such as medical records and phone calls is a major concern. "We're not trying to hone in on information on one person," said Powell of the state's big data and analytics programs. "We're interested in a broad look at health, unemployment or crime in the state of Maryland."

So in this time and in this place, analytics might be our best hope of making sense of masses of data too large to comprehend. It may provide insight into trends too large or too small, too slow or too fast for us to perceive, and help us manage our most complex concerns, or largest counties and smallest towns. But it also has the potential to be turned against us to create a surveillance state. The analytics predicting the outcome of that conflict have yet to be developed. ■

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"We are all on the same team" is a phrase often used in law enforcement to remind public safety personnel that the distinctions and rivalries that come with differing uniforms should not distract from the common goal of protection and enforcement.

But in today's environment, successful law enforcement requires more than just a willingness to work together. It requires the ability to effectively share data, information and intelligence across multiple jurisdictional boundaries in a secure and efficient manner.

The public safety agencies in Wake County, N.C., promote data and intelligence sharing based on the belief that doing so enhances their ability to detect, prevent and respond to public safety issues across the county and beyond. Fortunately, Wake County is utilizing technology to help them do so effectively and efficiently.

A CRITICAL HUB

The Wake County Sheriff's Office, located in the Wake County Public Safety Center in downtown Raleigh, is the primary law enforcement agency for the unincorporated areas of Wake County. The office employs nearly 1,000 personnel working in six divisions, including Patrol, Investigative, Special Operations, Judicial Services, Detention and Administrative.

The Sheriff's Office relies on a SunGard-based public safety and justice software suite to help manage the county's criminal justice data. It also houses the county-wide criminal justice system. As such, the office acts as the central data hub for all public safety divisions within the county. This approach has proven an effective cost-sharing model. Rather than each agency buying and maintaining their own servers, the Sheriff's Office owns and maintains all public safety-dedicated servers, which other agencies access and utilize as needed.

"Some of the agencies have no IT staff at all, so this approach has proven very successful for them," says Christopher J. Creech, manager of Information Technology for the Wake County Sheriff's Office.

The model has also helped further the county's data-sharing goals. "Using this approach, we are able to freely share all of our criminal justice and civil process data amongst each other as a true law enforcement community," says Creech.

THE DOWNSIDE OF DATA SHARING

Unfortunately, Wake County's technology-sharing strategy also had a drawback. Because the Sheriff's Office acted as the main cog in the public safety data-sharing wheel, the other agencies relied on the office anytime they needed to make a change or addition to their data.

"Other agencies could not access the system to create their own user accounts, to add new employees, change someone's access privileges or even to change a title if someone was promoted," says Creech. "The Sheriff's Office had to devote staff time to handle all of those needs."

As a result, resources at the Sheriff's Office were strained. The process frustrated end users as well. "Many of the agencies wanted some autonomy to be able to manage their own records without having to rely on us every time they needed to change something," says Creech. "We have a lot of novice IT people. They did not understand how the system worked — they just wanted to be able to go to one place and update their department information."

Ultimately, the cumbersome processes affected the entire public safety community. When the Sheriff's Office became overwhelmed, critical data could not be added or changed in a timely manner. Yet the office saw few alternatives. Allowing the other agencies direct access to the SunGard database was not feasible given its complexity and the sensitivity of the data. The county needed a way to ease the burden on the Sheriff's Office while allowing the other public safety agencies to maintain their own data in a controlled, secure and effective manner.

ENABLING END USERS: DELL SOFTWARE GRANTS AUTONOMY WITHOUT SACRIFICING SECURITY

In March 2012, leaders at the Wake County Sheriff's Office implemented Quest One Identity Manager — Active Directory Edition and ActiveRoles Server from Dell Software. Quest One Identity Manager — Active Directory Edition empowers end

users to complete the most labor-intensive Active Directory group-related tasks on their own, without administrator involvement, while leveraging pre-defined approval processes and workflows. By using an easily deployed, simple and customizable request portal that automatically flows to the appropriate group owner in accordance with established policy, approved requests can be automatically fulfilled, removing the burden from Active Directory administrators.

"With Active Directory self-service, users can now change, update and control their own data," says Creech. "They can make changes as they happen instead of depending on and waiting on us to do it."

With Quest One Identity Manager — Active Directory Edition, when a user adds or changes data or creates new records, backend scripts interface with the SunGard system and update the appropriate databases automatically.

"It has taken much of the burden off of the Sheriff's Office," says Creech. "We don't have the staff to support all the other agencies and their users anymore. It works well and allows us to focus on other priorities."

Additionally, the burden of user access requests are transferred from IT staff to business owners without sacrificing security, compliance and governance objectives.

The addition of ActiveRoles Server has made securing and protecting Active Directory simple and efficient. By delivering automated tools for user and group management and Active Directory delegation, ActiveRoles Server allows the Sheriff's Office to protect critical Active Directory data and eliminate unregulated access to resources.

"The program allows agency personnel to use the system but prevents them from getting native access within the application, which would grant them a broader set of privileges that we wouldn't be comfortable with," says Creech. "It allows them to manage their agency and their users without giving them access to change another agency's data or to view certain types of protected information."

> "The ability to quickly update and share data is a huge factor in enabling us to do our jobs better. Ultimately, it allows us to more effectively serve and protect the public."
>
> Christopher J. Creech, Manager of Information Technology, Wake County Sheriff's Office

Quest One Identity Manager — Active Directory Edition also allows the Sheriff's Office to assign ownership of specific groups or distribution lists to key individuals in the organization based on their business needs and organizational roles. For example, the Sheriff's Office divided users into view-only members and partner agencies. View-only members, such as the Clerk of Courts, District Attorney's Office and State Bureau of Investigations, can sign in and view data but cannot enter or change it. Meanwhile, partner agencies (there are currently 10) can view data as well as change information or enter new data. In all, the system is currently used by just over 1,600 public safety personnel.

HELPING PUBLIC SAFETY AGENCIES DO THEIR JOBS BETTER

Creech says automatic user notifications were an additional benefit he did not expect with the implementation of Quest One Identity Manager — Active Directory Edition and ActiveRoles Server. Any time a change is requested to an account, a password is reset or security privileges are altered, the affected user is automatically alerted.

"In the law enforcement community it is important to know what is going on, especially if something is changed that a public safety officer didn't know about or didn't ask for," says Creech. "It's a nice added benefit that helps alert us that something is wrong or if unauthorized changes are made to an account."

By 2014, the Sheriff's Office plans to enable Quest One Identity Manager — Active Directory Edition's Group Attestation Engine as well. The Attestation Engine will allow business managers or group owners to schedule routine or on-demand attestation of Active Directory groups and distribution lists in order to ensure and maintain compliance.

Ultimately, Creech says the benefits of implementing Quest One Identity Manager — Active Directory Edition and ActiveRoles Server go beyond his agency and the other public safety agencies within Wake County.

"The ability to quickly update and share data is a huge factor in enabling us to do our jobs better," he says. "Ultimately, it allows us to more effectively serve and protect the public."

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Digital Communities are real places that understand and value the transformative power of broadband connectivity, core computing technologies and interoperable applications to improve the way government conducts business and interacts with citizens. The Digital Communities Program showcases solutions from leading technology companies that are specifically designed for communities and local governments that want to exceed the expectations of their citizens. In addition, the program provides a collaboration forum where community officials discover and share emerging best practices and innovative community technology deployments.

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Digital Champs

Annual polling shows how county governments use digital technologies to serve their citizens and streamline operations.

By Matt Williams / Contributing Writer

Montgomery County, Md.'s open government goals more closely reflect those of states than other governments similar to its size.

WIKIPEDIA

Montgomery County, Md.; Chesterfield County, Va.; Catawba County, N.C.; and Charles County, Md., made it a clean sweep for the East Coast in the 2013 Digital Counties Survey announced on July 18.

The four counties earned top rankings in their respective population categories for effectively and efficiently using digital technologies to serve their citizens, streamline operations and achieving measurable benefits. The annual survey is conducted by the Center for Digital Government in conjunction with the National Association of Counties. Hundreds of submissions were judged by a panel of experts, including Center for Digital Government executives and former survey winners.

Survey questions were asked in a variety of areas such as computing, networking, applications, data and cybersecurity, open government and mobile services. The survey results reflect work done during 2012. The top 10 counties in each of four population categories received a ranking. (See sidebar)

Besides identifying the nation's most tech-savvy county governments, the survey points to some big-picture trends that are occurring across the country. For instance, 84 percent of counties that submitted the survey said they are consolidating data centers, applications and staff — a 13 percent increase over the past two years. Meanwhile, 80 percent are pursuing joint service delivery — a 10 percent increase compared to two years ago. In addition, 49 percent said they were implementing business intelligence and/or advanced analytics at the enterprise level — up 18 percent from last year.

"This year, counties are focused on saving money where they can by simplifying their information technology infrastructure and sharing systems with other governments," said Todd Sander, the Center for Digital Government's executive director. "Many of them have found ways to provide better information security, transparency and citizen engagement with innovative uses of social media and advanced decision support tools."

The winning counties in this year's survey are actively working on projects in these focus areas. Here are synopses of what the four No. 1 counties have accomplished.

POPULATION OF 500,000 OR MORE: MONTGOMERY COUNTY, MD.

Montgomery County is tackling the issue of open data and transparency like few counties have, reaching for goals more common in big cities and state governments. Backed by a mandate established through local legislation, the county launched a major open government initiative featuring a suite of interconnected websites designed to offer data sets and engage citizens in conversations, as well as bring them to the county's mobility, transparency and accountability offerings. In whole, the program is called openMontgomery.

"We're very excited about it and have grand plans to expand it in the future," John Gillick, the county's technology services manager, said about openMontgomery.

In tandem with the transparency program, Montgomery County launched a strategy of creating HTML-5-based mobile applications. The county's mobile website is now the launching place for HTML 5 applications like real-time bus data and 311. With openMontgomery, the county is encouraging citizens to use the data for writing their own apps.

In addition, many of openMontgomery's online components are hosted in the county's private cloud, which includes more than 100 applications and 22 departments, groups or agencies. Montgomery

County says it's saving $2 million annually through the private cloud strategy.

Last year the county also started a formal innovation program and appointed a chief innovation officer. Furthermore, it expanded its private fiber network to additional sites, including the local public school system and a college.

In the midst of all this, Gillick said everyone recognizes that the budget is a constraint for Montgomery County government, as it is in most other counties.

"Money is tight; we try to do the best with what we have," he said. "We have smart people working here, and that's how we get things done."

AND THE WINNERS ARE ...

Population of 500,000 or More:

1st Montgomery County, Md.
2nd Hennepin County, Minn.
3rd San Diego County, Calif.
3rd Fairfax County, Va.
4th King County, Wash.
4th Oakland County, Mich.
5th Fulton County, Ga.
5th Prince George's County, Md.
6th Sacramento County, Calif.
6th Westchester County, N.Y.
7th Baltimore County, Md.
7th Snohomish County, Wash.
8th Wake County, N.C.
9th San Joaquin County, Calif.
9th Orange County, Fla.
10th Tarrant County, Texas
10th Tulsa County, Okla.

Population of 250,000-499,999:

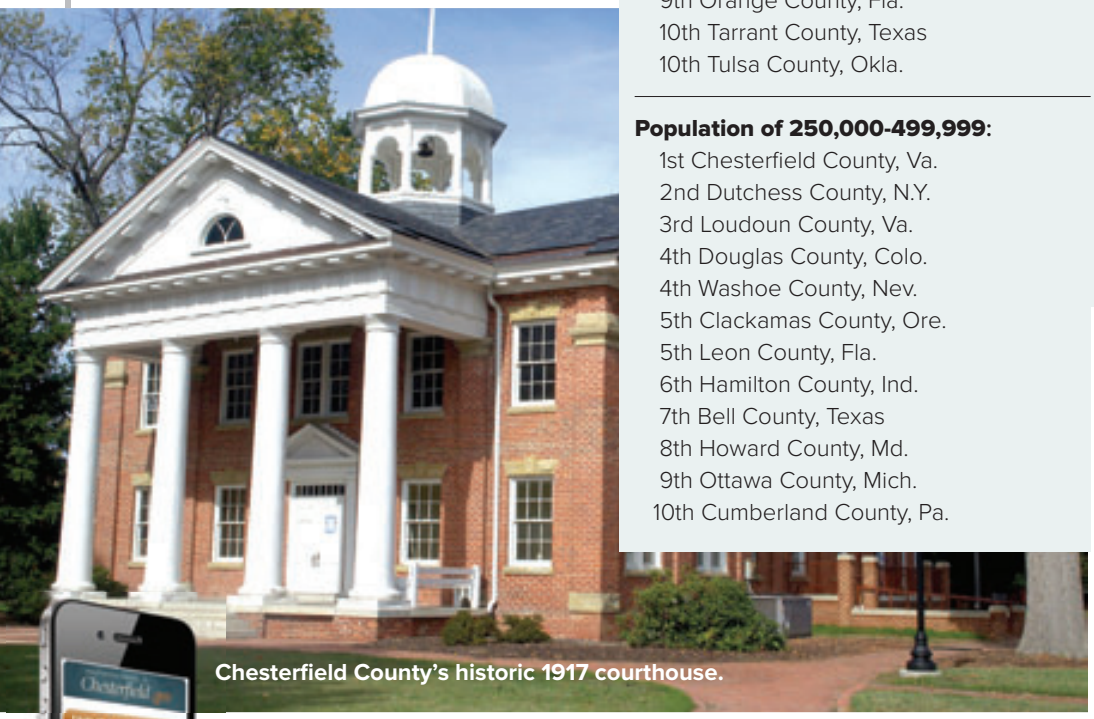
1st Chesterfield County, Va.
2nd Dutchess County, N.Y.
3rd Loudoun County, Va.
4th Douglas County, Colo.
4th Washoe County, Nev.
5th Clackamas County, Ore.
5th Leon County, Fla.
6th Hamilton County, Ind.
7th Bell County, Texas
8th Howard County, Md.
9th Ottawa County, Mich.
10th Cumberland County, Pa.

Population of 150,000-249,999:

1st Catawba County, N.C.
2nd Arlington County, Va.
3rd Lackawanna County, Pa.
4th Gaston County, N.C.
5th Dona Ana County, N.M.
6th Sussex County, N.J.
7th Clermont County, Ohio
8th Cabarrus County, N.C.
8th Davidson County, N.C.
9th Mohave County, Ariz.
9th St. Tammany Parish, La.
10th Boone County, Mo.

Population of 150,000 or Less:

1st Charles County, Md.
2nd Allegan County, Mich.
3rd Nevada County, Calif.
4th Albemarle County, Va.
5th Roanoke County, Va.
6th Napa County, Calif.
7th Martin County, Fla.
8th Franklin County, Va.
9th Gloucester County, Va.
10th Moore County, N.C.



Chesterfield County's historic 1917 courthouse.

WIKIPEDIA

POPULATION OF 250,000-499,999: CHESTERFIELD COUNTY, VA.

Chesterfield County has regularly placed among the top five in the Digital Counties Survey, and it came out on top this year thanks to the completion of several projects that were a long time in the making.

Like many local governments, Chesterfield County is engaged in mobile and social projects. A major bring-your-own-device pilot is leveraging desktop virtualization for hundreds of users and devices. The county launched a speedy mobile version of its website, and county departments like animal control are moving into Facebook and other social media channels.

Work also continues to optimize citizen services. Chesterfield County is expanding its Citizen Wi-Fi initiative to nearly 90 locations. County libraries, meanwhile, now lend PCs to residents.

In addition, Chesterfield County and its Board of Supervisors continue to earn high marks for transparency. When the Chesterfield Board of Supervisors approved a financial plan for fiscal 2013, all presentations, videos and a searchable line-item version of the budget were posted online for citizens to view.

CIO Barry Condrey credits county supervisors for consistently supporting technology investments. The county tries to proactively provide solutions as departments need them, and priority is given to projects that can be used at the enterprise level — 10 or more departments.

"We spend a lot of time making sure we're working on the right stuff," Condrey said. "There's always three times as much need as there are people and resources to do the work."

Chesterfield County is one of eight Virginia counties making an appearance in the 2013 Digital Counties Survey rankings. Condrey said that may be due in part to the fact that cities and counties are completely separate entities in Virginia. Cities don't reside in counties.

"We're used to having to be more independent and fending for ourselves, and that's led many Virginia localities to seek their own efficiencies and innovations, and ferret out their own applications for their population," he said. "I think it drives a lot of innovation."

The former Catawba County Courthouse, now a history museum.

LEARNNC.ORG

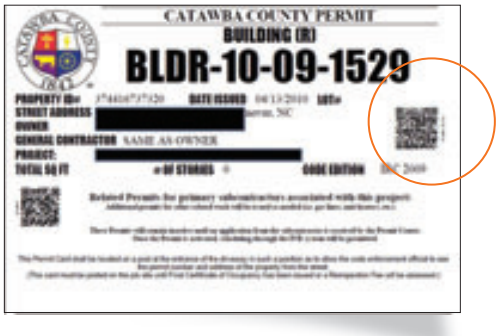
POPULATION OF 150,000-249.999: CATAWBA COUNTY, N.C.

Catawba County is trying hard to ensure that its technology services and systems are as mobile-friendly as possible.

"We are constantly exploring ways to make our system better and adapt to all the new devices out there," said CIO Terry Bledsoe. "I think that's probably what put us out front [in the survey rankings]. There's hardly a week that goes by that we don't change something to make it a little bit easier for somebody to use some type of device."

For instance, the maps on the county's GIS site are available on everything from a desktop to a smartphone, and are adaptable and easy to use for citizens and workers alike. The county's programmers commandeered every type and brand of device they could find to make sure the maps worked correctly.

Mobility even has reached into the world of building permits, where Catawba County puts QR codes on building permit cards to help contractors and interested residents access property ownership details, inspection times and other information on their smartphones. The QR codes link to a GIS site where these data sets are publicly available.



CATAWBA COUNTY PERMIT
BUILDING (R)
BLDR-10-09-1529

Catawba County is making strides in several other areas besides mobility. The county launched "best practice dashboards" that link metrics to budget and performance goals. For example, under a dashboard for the county's 911 center is updated information on dispatch call numbers and call times, as well as several other statistics.

The county also is involved in a public-private regional EcoComplex with Appalachian State University that is converting waste products to energy or raw materials. The facility sells excess power back to the grid, and a biodiesel operation there is turning corn, soybean and sunflower crops into biofuel, some of which is powering the county's vehicle fleet. Bledsoe's department used a National Association of Counties grant to build out a wireless mesh network throughout the EcoComplex, which is several hundred acres.

POPULATION OF 150,000 OR LESS: CHARLES COUNTY, MD.

Charles County made two big leaps last year that propelled it to the top of the Digital Counties Survey. One was an all-in approach to mobility, which gave county employees the choice of bringing their own device or opting instead for a county-issued BlackBerry. The county also began issuing tablets and installed an enterprise mobile device management system, while focusing on developing and acquiring mobile applications for use in its mobile ecosystem.

The other priority was a complete overhaul of Charles County's website and development of a new mobile website. Employees in all areas have been empowered to update the website's content so that IT staff doesn't have to manage the updates alone anymore.

Along the way, Charles County constructed its first LEED-certified building (a library), installed building automation systems, has three electric vehicle charging stations at county facilities, offered streaming video of live and past meetings of the County Commissioners, and put the Planning Commission's documents on a cloud solution to improve efficiency and transparency.

The LEED-certified Waldorf West Library in Charles County.

MARYLANDPUBLICSCHOOLS.ORG

Charles County IT chief Evelyn Jacobson said the community is reaping the benefits of a supportive governing board that realizes the value of technology, and is leaning on the county's experienced IT staff and developers, who bring many years of institutional knowledge to the new projects. The county's institutional fiber network also is invaluable, she said, because it's bringing high-speed Internet to about 100 sites, and allows those locations to utilize the same tools as what's being used at the county building.

"We have a lot of positive things going for us here," Jacobson said. GT

Editor's Note: Government Technology and the Center for Digital Government are owned by the same parent company, e.Republic Inc.

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By Miriam Jones | Chief Copy Editor

Send product review ideas to mjones@govtech.com, twitter@mjonesgovtech

3-D Projection

Christie introduced the Christie Mirage 4K25 projector for 3-D applications for advanced visualization in automotive, location-based entertainment, government, military, oil and gas, and more. The projector offers 1.2 gigapixels per second, floating point architecture, and full 4096 x 2160 resolution at 120 Hz for 3-D. The projector ranges in brightness from 10,000 to 25,000 lumens, has a variety of input options including DisplayPort, HDMI and HD-SDI, and a built-in tool for curved screens. It comes with a detachable LCD control module. Standard or long-range emitters, as well as active and passive 3-D eyewear are optional. **www.christiedigital.com**

Touch Display

U-Pointer from BALD Technologies is a tool that converts a projected image or plasma into an interactive workstation. The U-Pointer Accessory allows any U-Pointer model to be added to an existing flat panel display, thus transforming it into an interactive touch display. The device's arm creates a semi-permanent setup to interact directly with the desktop on users' flat panel display — all without the expense of replacing the older display with a new interactive touch display. The U-Pointer can be mounted vertically or horizontally to adapt to users' needs. Installation and position fine-tuning are made simple with thumb knobs — no tools required. The cable management system is designed for easy cable routing and clean installation. **www.baldtechnologies.com**

Hardy Tablet

The GammaTech Durabook TA10 Tablet can withstand drops from 5 feet onto 2-inch plywood set over concrete, and meets military standards for shock, dust/spill and salt/fog resistance. The tablet contains an Intel Ivy Bridge i5-3427U processor and a 32 GB, 64 GB or 128 GB m-SATA solid state drive. A 2.5-inch HDD provides storage sizes of 320 GB, 500 GB or 750 GB. The 10.4-inch XGA (1024 x 768) LCD with resistive multi-touch panel (with the option for a sunlight-readable screen). There's a front-facing 1.3 megapixel camera and an optional rear-facing 5 megapixel auto-focus camera. **www.gammatechusa.com**

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>
> HACKER CHARLIE MILLER

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Hacking for **Safety**

Imagine driving down the highway 80 mph when your car suddenly brakes and you are no longer in control of the steering wheel. As cars become smarter and more connected, there are growing fears that hackers could break into these onboard systems and cause all sorts of mayhem. "White hat" hackers Charlie Miller and Chris Valasek examined the issue, conducting federally funded research to determine the security vulnerabilities of the Toyota Prius and Ford Escape. The hackers plan to release a 100-page paper outlining their findings — but they won't divulge information needed to conduct real-world attacks. They say their goal is to encourage other white hats to notify automakers about potential security flaws. SOURCE: REUTERS

Goodbye, Cords!

Your next desk could be a wireless charging station. DuPont Building Innovations worked with the Power Matters Alliance to embed wireless charging tech into its Corian solid surfaces line — a move toward creating functional furnishings. While the company is starting with kitchen counters, the goal is to embed the technology in larger-scale projects, everything from desks at schools and workplaces to public structures, which could one day eliminate the hunt for outlets. SOURCE: DUPONT

Smart Unbuilding

Building-related construction and demolition produces approximately 160 million tons of debris each year in the U.S, with the Environmental Protection Agency estimating that only 20 to 30 percent of the debris is recycled. That percentage could increase significantly through the use of the **ERO Concrete Recycling Robot,** a conceptual machine that would erase buildings. The idea behind ERO is to use high-pressure water to separate materials from cement, sending aggregate to be cleaned and reused to make new concrete and cleaning rebar for use by another project. Developed by Omer Haciomeroglu at Sweden's Umea Institute of Design, the robot would even recycle the water used for demolition and cleaning, providing a greener approach to destruction.

SOURCE: INDUSTRIAL DESIGNERS SOCIETY OF AMERICA

IMAGE COURTESY OF: OMER HACIOMEROGLU

NEXT-GEN NETWORK FUNDING:

Can crowd funding help build the next generation of mobile networks? Maybe so. Outside of government and industry influence, organizations are seeking funds to develop networks in less expensive, innovative ways. The Serval Project, for example, is using Indiegogo to collect $300,000 for open source software that will directly share messages and files between devices. And the nonprofit organization Ushahidi raised $172,000 to move its "backup generator for the Internet" from prototype to a field-ready device. Known as the BRCK, the device can run on batteries and switches between Ethernet, Wi-Fi and cellphone networks to provide consistent Internet access even during times of disaster. SOURCE: GIGAOM

USHAHIDI

Send Spectrum ideas to Managing Editor Noelle Knell, nknell@govtech.com, twitter@GovTechNoelle

MAKE PLANS TO ATTEND TODAY!

Essential education and valuable professional connections will be the takeaways at GIS-Pro 2013: URISA's 51st Annual Conference for GIS Professionals. GIS-Pro 2013 will take place September 16-19, 2013 at the Rhode Island Convention Center in Providence, Rhode Island.

URISA Certified Workshops are featured with both full and half-day offerings:

- GIS Strategic Planning - *2013 update*
- Asset Management: Planning, Strategy, and Implementation - *2013 update*
- GIS & Surveying-Open Exchange between a Surveyor and GIS Manager - *new 2013 workshop*
- Introduction to Open Street Map for GIS Users - *new 2013 workshop*
- Address Standards: Implementing Quality and Data Sharing - *2013 update*
- Emergency Preparedness for GIS (half-day)
- GIS Return on Investment (half-day)

This year's conference is co-hosted by the New England Chapter of URISA (NEURISA), bringing both enthusiasm and important educational content to the event.

Concurrent **educational sessions** cover topics ranging from '*Storytelling and Effective GIS Communication*' and '*Developing Organizational Best Practices*' to '*Business Intelligence Technologies*' and '*Solving Mobile Mapping Challenges*'. An important conversation about '*Ethics in GIS*' and a focused session for '*Women in GIS*' are also on the schedule.

Sponsors and exhibitors are an important focus of the conference with a new Vendor Spark session providing a valuable platform for organizations to highlight their products and services.

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Kristy Fifelski
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David Salzer and Patrick Santoso,
Technology Transfer Center, University of New Hampshire

Professor Jack Mustard,
Brown University

For complete conference details, including registration, hotel and travel information, visit http://www.gis-pro.org

 By Stephen Goldsmith

Building the Social Town Hall

The four stages of social media and government in 140 characters or fewer.

Social media is the new town hall where government leaders join residents in the constant digital conversation that occurs on Twitter and other sites. However, in addition to straightforward communication, social media offers much more in transforming how government works and listens. The use of social media is now evolving through four stages.

Stage 1 / Social media as a communications channel. Most city and state elected officials now use social media accounts to share updates and respond to questions from constituents. This information ranges from street cleaning notices to vital emergency notifications. In times of crisis, social media, both to and from city hall, often precedes traditional news outlets. Whether during the search for the terrorists in Boston or responding to the problems caused by Sandy, eyewitness residents and public officials alike turned to Twitter as one of the best and quickest ways for government to communicate. Newly developed apps let residents report problems more quickly and accurately than calling 311.

Stephen Goldsmith is the Daniel Paul Professor of the Practice of Government at Harvard Kennedy School and directs the Innovations in Government Program and Data-Smart City Solutions. He previously served as mayor of Indianapolis and deputy mayor of New York City.

Stage 2 / Enhancing constituent satisfaction with social media. We can of course find better uses for social media than just facilitating ways for voters to complain or public officials to brag about what they've done. The next level of social media use is creating a digital town hall to collect ideas and input from residents. Social tools allow a broader segment of a community to participate in solving a problem or reacting to an idea than a typical town hall, which is dominated by the loudest person who has the time to invest. For example, San Francisco Mayor Ed Lee recently combined live-streamed media with questions about the city's budget submitted via email and Twitter to gather input. Incorporating digital tools into discussions and presentations that already occur at the city level is an easy way to begin using social media at low cost. These conversations can also be entirely new efforts to crowdsource ideas to big problems. For example, Chicago hosted a Twitter discussion called #WhatIfChicago seeking ideas to reduce illegal guns on the city's streets, which quickly grew into a global conversation.

> **These conversations can also be entirely new efforts to crowdsource ideas to big problems.**

Stage 3 / Listening and acting better through social media. Although Twitter campaigns and mayoral accounts will engage a good portion of a city's residents, governments can cast an even wider net through automated analysis of social media conversations taking place in a geographic region. Washington, D.C., has begun to automate sentiment mining on an agency level to supplement direct comments and feedback and develop more holistic ratings of each agency. Such analysis also can trigger service requests (for trash pickup, etc.) before a resident ever submits a formal complaint. Sentiment analysis lets public officials understand concerns before they become full-scale problems.

Stage 4 / Social democracy. The size and complexity of local and state government produced over the last century has moved more to technical professionalism and government by representative elites and less to democratic participation. Talking to large numbers of individuals, synthesizing their thoughts and translating it into action became daunting and in some ways viewed as inappropriately political. Our next generation of social networking will look at ways to renew the democratic fabric — deeply weaving the mined and curated community reactions through the social network into the daily functions for customer service, rule-making, prioritization, problem solving and ideation. When analyzed and combined with 311, 911 and stat program data, social media inputs from residents can unlock insights that make government more efficient and effective.

Social media tools, now widely used for communications, can harness the wisdom of crowds, improving government and involving citizens in a renewed democratic confidence. GT

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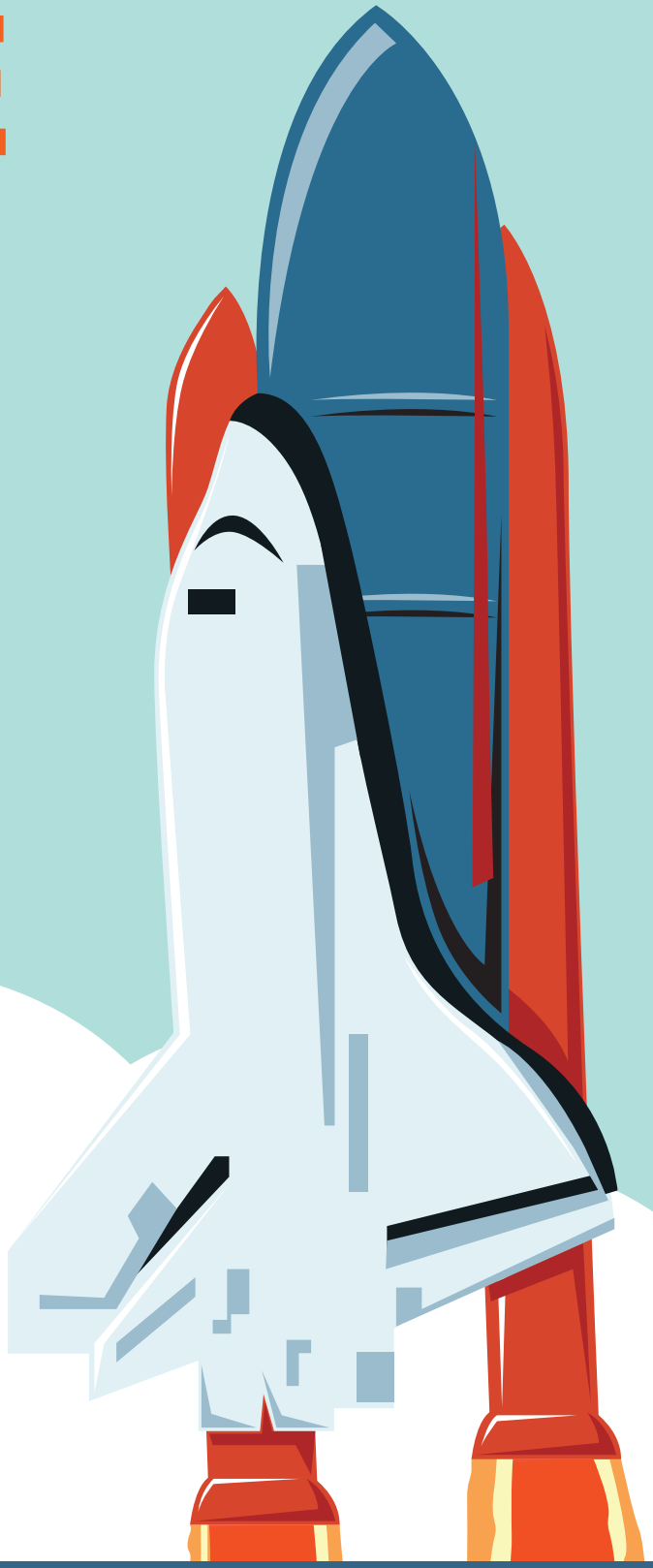

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By Steve Ressler

The Johnny Manziel of Government

It's September and that means it is my favorite time of the year: college football season.

Summer is here, which means many students are graduating, new faces are starting to pop up at work and the advice columns start pouring in.

With another college football season just getting under way, here are my five keys to success that government can learn from college football.

This year, we have the return of Johnny Manziel, the first freshman quarterback to win the Heisman Trophy. In his first season, he broke records for total offense in a season, led Texas A&M to an 11-2 record and victory in the 2013 Cotton Bowl.

So what does this mean for you in government? Actually a lot. In government, we often play by the "experience" rule where pay and responsibility are based on number of years in the position.

In today's era, where a freshman can be the best player in the country, surely government has some of its own freshmen waiting for their chance to start.

Here's what government can learn from Manziel:

1 / Ignore the freshman rule. For a long time, most universities would not play freshmen. It was simple: Freshmen were not strong enough or smart enough, so they shouldn't play. Obviously that notion has changed with a freshman Heisman Trophy winner. Give your new employees a shot and play them — not all of them need years of preparation. The truly talented can shine right away and deserve a chance to start.

2 / Let people compete. Going into Manziel's freshman year, Texas A&M was in a pickle. The university's last quarterback had just left for the NFL, and it didn't know who to pick to fill the position. So the team let three quarterbacks — Manziel, Jameill Showers and Matt Joeckel — compete for the role. Showers and Joeckel were older, but it wasn't about experience; it was about skill and who earned the job. In your agency, don't just give the biggest project to the most experienced employee, give it to the person who was most successful on the last project.

3 / You still need a backup. In football, we always need a great backup. Even with a Heisman Trophy winner, all it takes is one play, a hit and injury, and the backup is the new starting player. Make sure you are doing that for your team — it's the proverbial hit-by-the-bus test (or more likely, an employee got a new job). Are you training backups in case of a change in status?

4 / Avoid the sophomore slump. Manziel won the Heisman his freshman year, but things haven't been as positive during the off-season. He's been arrested, accused of skipping out of a training class and dealing poorly with the new pressure. It's unclear how he'll perform this year. And it's the same with your young stars. Maybe they did an awesome job their first year, but make sure they don't get too cocky and continue giving them the support they need. Tied to point No. 2, it's all about who is performing the best now.

5 / It's about wins. In the end, college football is all about wins. The coach puts together a strategy, plays and players on the field with one goal: winning. And they just care about winning right now, not who has more experience, who is a nice person or who is on full scholarship versus a walk-on. Government should be the same — it's all about providing the best services to the public now. As a leader, we should be putting the best players on the field each week with the most current plays.

September is my favorite time of the college football season. Everyone starts fresh with a 0-0 record and aspirations. Use September in your agency the same way: Make people compete, start the winners — not just those with experience — and play to win. GT

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