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Publisher: **Alan Cox**, alanc@erepublic.com

EDITORIAL

Editor: **Noelle Knell**, nknell@govtech.com
 Managing Editor: **Elaine Pittman**, epittman@govtech.com
 Web Editor & Photographer: **Jessica Mulholland**, jmulholland@govtech.com
 Chief Copy Editor: **Miriam Jones**, mjones@govtech.com
 Copy Editor: **Lauren Harrison**, lharrison@govtech.com
 Senior Editor: **Tod Newcombe**, tnewcombe@govtech.com
 Assistant News Editor: **Eyragon Eidam**, eeidam@govtech.com
 Staff Writers: **Theo Douglas**, tdouglas@govtech.com...
Ryan McCauley, rmccauley@govtech.com
Ben Miller, bmiller@govtech.com
Zack Quaintance, zquaintance@govtech.com

Contributing Writers: **Julia McCandless**, **David Raths**, **Adam Stone**
 Editorial Assistant: **Janine Fastenau**, jfastenau@govtech.com

DESIGN

Chief Design Officer: **Kelly Martinelli**, kmartinelli@govtech.com
 Graphic Designer Pubs: **Kale Mendonca**, kmendonca@govtech.com
 Senior Designer Custom: **Crystal Hopson**, chopson@govtech.com
 Production Director: **Stephan Widmaier**, swidm@govtech.com
 Production Manager: production@govtech.com

PUBLISHING

SENIOR VP OF STRATEGIC ACCOUNTS:
Stacy Ward-Probst, sward@govtech.com

VPS OF STRATEGIC ACCOUNTS:

Kim Frame, kframe@govtech.com
Arlene Boeger, aboeger@govtech.com
Shelley Ballard, sballard@govtech.com

SALES DIRECTORS:

Melissa Sellers, msellers@govtech.com
Tracy Meisler, tmeisler@govtech.com
Karen Hardison, khardison@govtech.com
Lara Roebbelen, lroebbelen@govtech.com
Carmen Besirevic, cbesirevic@govtech.com
Lynn Gallagher, lgallagher@govtech.com
Kelly Schieding, kschieding@govtech.com

ACCOUNT EXECUTIVES:

Paul Dangberg, pauld@govtech.com
Rebecca Regrut, rregrut@govtech.com
Kathryn Nichols, knichols@govtech.com
Joelle Tell, jtell@govtech.com

BUS. DEV. MANAGER:

Maggie Ransier, mransier@govtech.com

SR. SALES ADMINISTRATOR:

Kelly Kashuba, kkashuba@govtech.com

SALES ADMINISTRATORS:

Jane Mandel, jmandel@govtech.com
Morgan Rothenbaum, mrothenbaum@govtech.com
Ashley Flynn, aflynn@govtech.com
Danielle Murphy, dmurphy@govtech.com

Sr. Dir. of Sales Operations: **Andrea Kleinbardt**, akleinbardt@govtech.com

Content Studio
 Managing Editor: **Jeana Bigham**, jbigham@govtech.com
 Dir. of Web Marketing: **Zach Presnall**, zpresnall@govtech.com
 Web Advertising Mgr: **Adam Fowler**, afowler@govtech.com
 Subscription Coord.: **Eenie Yang**, subscriptions@govtech.com

CORPORATE

CEO: **Dennis McKenna**, dmckenna@govtech.com
 President: **Cathilea Robinett**, crobinett@govtech.com
 CAO: **Lisa Harney**, lharney@govtech.com
 CFO: **Paul Harney**, pharney@govtech.com
 Executive VP: **Alan Cox**, alanc@govtech.com
 Chief Content Officer: **Paul Taylor**, ptaylor@govtech.com
 Dep. Chief Content Ofc.: **Steve Towns**, stowns@govtech.com
 VP Research: **Todd Sander**, tsander@govtech.com

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The Consolidation End Game

According to Center for Digital Government research, 25 states run IT centrally — the preferred method by a comfortable margin. Other surveys back up the preference that a consolidated IT operation is the desired end game for a majority of government CIOs, including the 2014 Digital States Survey when consolidation ranked as the second most widely adopted computing initiative. But while some who follow this sort of thing started to get the impression that what could be consolidated already had been, that assumption proved faulty. It seems there is always more consolidating to do.

At the NASCIO Midyear conference in Virginia at the end of April, we talked to several CIOs in the midst of significant efforts to consolidate. It's one major way state CIOs can help governors address the budget shortfalls that continue to plague many states. Here's how three CIOs are approaching the task:

Both Pennsylvania CIO John MacMillan and Montana CIO Ron Baldwin are involved in surgical consolidation efforts, each expecting to achieve millions in savings as a result. Baldwin's, driven by an executive order signed last year by Gov. Steve Bullock, is focused on infrastructure at the executive branch level. MacMillan's has taken the form of a shared services initiative between human resources and IT that started in January.

"What we're trying to do there is reduce cost, eliminate overlapping, functional redundancy and — we hope — deliver better value to the business," MacMillan said.

Nebraska CIO Ed Toner turned to consolidation for similar reasons. Building his business case, he found that industry standards pegged the state as overstaffed in every area of IT. Coupled with anticipated

cost savings in the millions, similar to what was expected by his peers, he methodically began to consolidate in three waves, starting with the network, followed by servers and capping it off with desktop support.

Each phase involved employee surveys and in-person interviews to inventory workloads and skills and determine the best path forward. Toner was careful to appoint former agency staff to leadership positions in the consolidated organization along the way to ease the inevitable cultural friction involved in such a major change.

Toner saved about \$5 million to \$6 million — roughly 5 percent of his budget — in the first year and expects to achieve that again in year two by combining networks, virtualizing servers and replacing the state's single storage solution with a money-saving three-tiered set-up. Nebraska also got rid of its disaster recovery site and now offers continuous availability at two redundant primary sites.

One of the biggest changes for Nebraska brought about by the consolidation was the addition of service centers throughout the state, with staff and spare equipment, ensuring that everyone is within an hour or two of IT support and eliminating the need for expensive, overnight travel to remote locations from the capital in Lincoln.

"The cost, definitely lower; the service, definitely better when you don't have to wait two days to get help," Toner explained, while pointing out an unanticipated benefit — enabling recruitment across the state, broadening the talent pool beyond what's available in the capital area.

Toner credits Nebraska Gov. Pete Ricketts for his crucial support for the consolidation process. "My biggest advice for anyone that wants to go through consolidation is have a strong governor that endorses it and helps you out all the way." 

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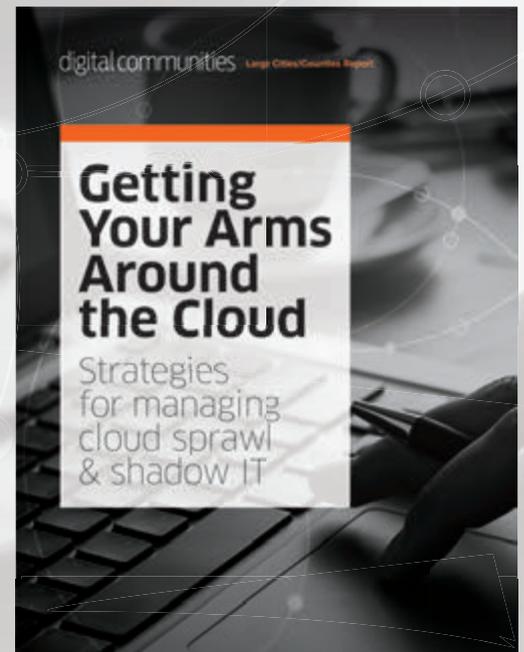


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Textalyzer Takes on Distracted Driving

The problem with combating distracted driving is that there are few state laws that lay out a protocol for establishing whether a driver was on his or her phone, and the only logistical means of determining it is through a witness or a confession. This, however, may be poised to change with the Textalyzer, a tech in the prototype and proof-of-concept stages that would allow officers to tell if a driver had been texting behind the wheel within 90 seconds of it interfacing with a personal device. Logistical details about the methodology of the Textalyzer, which is being developed by digital forensics specialist company Cellebrite, have not been released, and the company's CEO said it would take six to nine months to get it to market. Before Cellebrite can move forward, however, the New York State Legislature must pass a bill that would enable authorities to use such technology to enforce distracted driving laws.

Biz Beat

Hewlett Packard Enterprise (HPE) won a first-of-its-kind federal certification for a cybersecurity scheme that could help state and local governments work more with data in legacy systems. The company received the Federal Information Processing Standard (FIPS) 140-2 certification for the part of its SecureData package that deals with format-preserving encryption. That means a third-party lab validated that the security setup meets strict standards the feds rely on when buying technology from vendors. In this case, HPE is the first company to get FIPS certification for format-preserving encryption software. Many state and local governments have also adopted FIPS for cybersecurity purchases.

A (Procurement) Game Changer?

Officials in Ohio were hoping to transform IT procurement when they streamlined processes late last year to reduce the liability burden and work history requirement for smaller vendors. Now after the Jan. 5 release of the resulting RFP, CIO Stu Davis said reconfiguring how Ohio buys IT hardware, software and services has delivered on its promise before a contract is even awarded. Leading up to proposal submissions, the state received around 225 inquiries to the online question-and-answer process it conducts during all bids. More significantly, Davis said, around 500 potential vendors attended an online pre-bid conference that was the first of its kind. "We knew we had at least the right audience coming out of the gate," he said. When the filing period closed, the state had received 82 proposals involving 129 business entities, 99 of which were new vendors.

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of states lack funding to develop sufficient cybersecurity protocols, according to senators who introduced the State Cyber Resiliency Act that would provide grants to bolster security measures.

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The number of special districts in the U.S. — that's about 40 percent of the country's 90,000-plus local governments.

\$2.1M

The amount that Pluto AI, a predictive analytics platform for water utilities, wrapped up in a seed round.

30

companies can now test driverless cars in California. Apple received approval in April, making it the latest company to have permission to hit the state's roadways in autonomous vehicles.



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Oracle Helps Oakland Transform Critical Business Functions — On Time and On Budget

The City of Oakland, Calif., uses the Oracle E-Business Suite (EBS) to run nearly every aspect of the city's functions — from human resources and financials to procurement, payables and reporting. In 2015, the city began searching for a partner that could help them upgrade from EBS 11i to EBS R12.

According to Katano Kasaine, Oakland's treasurer and interim CIO, the city was up against a firm deadline. If the upgrade wasn't completed on time, the city might no longer be able to receive technical support from Oracle.

With so much on the line, city leaders were thorough and meticulous in their search for the right partner. In December 2015, they chose BIAS Corporation, an Oracle Platinum Partner specializing in designing and delivering high-performance IT solutions that leverage Oracle technologies to public sector agencies and businesses worldwide.

"The stakes were tremendously high for the City of Oakland," says Brian Gage,

HIGH STAKES REQUIRE THE RIGHT PARTNER

BIAS senior director of customer success and project director. "Kasaine literally put her career on the line when she chose us for this project. We absolutely could not afford to fail."

The City of Oakland tasked BIAS Corporation with completely re-implementing its Oracle EBS. In addition, BIAS was responsible for designing and implementing Oracle Business Intelligence Enterprise Edition (OBIEE) 11i, Oracle Business Intelligence Applications (OBIA), Oracle WebCenter 12.2 and Oracle Service Oriented Architecture (SOA) 12.2.

First, BIAS assessed the city's infrastructure performance, security, stability and scalability for Oracle environments hosted on Oracle Engineered Systems at the city's data center. This analysis included a review of the following:

- Exadata
- Exalytics
- Exalogic
- Network (1G, 10G and InfiniBand)
- Security

Longer-term scope analysis performed by BIAS included the following:

- Analysis of disaster recovery procedures
- Recommended standard operating procedures
- Recommended service level agreements for ongoing systems support
- Remediation tasks to deploy recommended changes from immediate term analysis

After rehabilitating the city's Exadata, Exalogic and Exalytics infrastructure, BIAS upgraded Oakland to Oracle Database 12c and designed and implemented the suite of applications. On December 20, 2016, the city went live — on time and on budget. Because of this, BIAS was selected as Oakland's long-term managed services partner supporting the Oracle infrastructure, database and applications suite.

In addition, BIAS migrated the entire Oracle infrastructure from two non-professional data centers to the city's third-party hosted private cloud. This included designing and building the supporting network within the new data center. "This enabled the city to house its multimillion-dollar system in a better environment," says Gage.

"It's a way for us to take a small step toward the public cloud by testing the waters," adds Kasaine.

SYSTEM RE-IMPLEMENTATION VS. SYSTEM UPGRADE

According to John Ezzell, BIAS Corporation co-founder and executive vice president, one of the keys to success was BIAS's view of the project as a system re-implementation as opposed to a system upgrade. "We couldn't just fix or upgrade what they had — we knew that success would require a complete re-implementation," he says. "Since we adopted this mindset going in, we didn't inherit a lot of the old problems from the previous efforts because we were basically starting over from scratch."

Kasaine concurs. "I asked the other vendors we spoke with about re-implementation versus upgrade and they gave pros and cons for each option and said we could go either way. BIAS is the only one that strongly recommended re-implementation. I understood what the decision meant for us and how important it was."

Another critical key was BIAS's "three-in-the-box" approach, aptly named by Kasaine. This refers to the presence of a BIAS technical



resource, a functional resource or subject matter expert, and a City of Oakland user at every stage of the project's implementation. "This enabled us to work with the city as a true partner, not just an implementer," says Gage.

"There was an understanding from the very beginning that everybody needed to get on the same page and hear the same thing," says Kasaine. "We needed to create an environment where everybody was comfortable talking to each other. Adopting this three-in-the-box philosophy helped resolve a lot of issues before they even came up, which was critical to success."

BENEFITS OF THE ORACLE EBS RE-IMPLEMENTATION

The City of Oakland has realized numerous benefits since going live in December 2016 with the Oracle suite of applications, including the following:

- The time required to process city payroll was reduced from 11 to 12 hours every other week to just 12 minutes.
- System stability and reliability increased from 70 percent uptime to 99.99 percent uptime.
- Oracle Application bandwidth increased 10-fold — from 1 GB to 10 GB, and application tier to database tier communication increased 40-fold.
- The time required for Exalogic virtualization was reduced from days or even weeks to just 4 hours.

- More than 100 Exachk errors have been cleared on the Exadata machines and machine functionality has improved.

Also, the city can take full advantage of the millions of dollars it has spent on its Exadata, Exalogic and Exalytics infrastructure architecture. For example, this capability has resulted in a 10-times improvement in database transmission speeds.

WHATEVER IT TAKES

Kasaine is thrilled to have successfully re-implemented the City of Oakland's Oracle E-Business Suite, but she doesn't pretend the process was always easy.

"What gave me confidence was that John Ezzell told me from the very beginning that BIAS was going to do whatever it took to make sure it got done," she says. "He was committed to this personally, and everybody at BIAS who was involved in the project understood that it had to be done successfully this time."

Oracle was also 100 percent committed to a successful re-implementation, Kasaine adds. "If there was anything we or BIAS couldn't get, Oracle showed up and filled the gap," she says. "On more than one occasion, Oracle came in and saved the day."

"I haven't seen this kind of commitment before from a technology vendor and provider, and it meant a lot to me," Kasaine adds. "It set the tone early on that everyone was going to do whatever it took — period."

EBS RE-IMPLEMENTATION SOLUTION RECAP

BIAS Corporation's successful re-implementation of Oracle EBS R12 for the City of Oakland included the following:

- Remediation of two, quarter-rack Exadata to clear all Exachk errors
- A complete rebuild of two, quarter-rack Exalytics devices and update of the devices with the latest security patches
- A complete rebuild of two, eighth-rack Exalogic devices and update of the devices with the latest security patches
- A reconfiguration of the Cisco and Enterasys network
- A reconfiguration of the InfiniBand network
- On-call support for all maintenance and management of Oracle Engineered & Storage systems (Exadata, Exalytics, Exalogic and ZFS), along with Cisco switches, F5 Load balancers, etc.
- EBS R12 and upgrade from 11i, including over a dozen modules supporting financials, HR/payroll, advanced benefits, expenses, iSupplier, procurement, collections, taxation, supplier lifecycle management, and projects and grants
- Business Intelligence 11g, upgrade from 10g, including development of over 200 custom reports
- WebCenter supporting interfaces between EBS and several third-party systems supporting rent control, point of sales systems, citizen relationship management and content management

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Putting People First

Tips for designing municipal tools with an eye on the user.

A number of years ago, a Midwestern state rolled out a comprehensive procurement system that allowed state employees to identify purchases based on 1,400 different categories. However, despite the specificity built into the system, the state was surprised to find that 20 percent of procurements were marked as “other.” The problem was not that there were not enough categories, but rather that state employees did not want to scroll through all 1,400 to find the right one.

This is all too typical an occurrence in city government. While many cities offer a host of technical tools to municipal workers, many are not well suited to employees’ needs. These types of problems underscore the value of human-centered design, a process in which the needs of end users are given extensive attention at each stage of the design process.

Many cities have begun employing user-centered design when developing processes and tools for residents, partnering with human-centered design leaders like Ideo to conduct research on resident experiences and adjust designs based on their findings. In some cases, municipalities

have created departments of human-centered design, while in others individual departments have worked with Ideo.

Cities should apply this same process to their internal design, encouraging departments

to bring in human-centered design experts or to train employees in human-centered strategies in order to accomplish these goals and create municipal tools with the city worker in mind. Here are three ways cities can model friendlier designs for employees, based on the concepts of human-centered design:

Mapping user experience: Journey mapping is one type of research that tracks users’ experience throughout a process. For example, Gainesville, Fla., mapped 13 steps of its permitting process in order to understand the barriers that residents encounter as they attempt to start a business. The city learned that residents often find themselves lost during this long process, unsure where to obtain the next permit or how many steps remain. As a result, Gainesville created a Department of Doing to act as a guide through the permitting process, providing a physical space where residents can obtain all the permits they need, a Web platform for guidance and a map that informs residents where they are in the process.

Cities may take a similar approach when creating tools or procedures for municipal employees, breaking the user experience down into component steps, observing where employees run into problems, and either reorganizing the process or creating tools that make the process easier.

Tailoring tools to employees: In conducting user research, cities may find that employees in the same department require differently designed tools or

procedures. For example, the Department of Veterans Affairs (VA) conducted customer experience research in 2014 that found that different veterans had distinct needs and preferences. While older veterans valued their close relationships with VA staffers, younger veterans were less interested in the human touch, prioritizing quick and easy access to services via laptops and mobile devices. As a result, the VA segmented its services, providing employees interacting with younger veterans more advanced technological tools to meet the needs of their service recipients.

(Employee) crowdsourcing: Cities may also promote user-centered design by crowdsourcing ideas and opening up the ideation process to city workers. Crowdsourcing is a process in which a government or organization provides a platform for residents or employees to submit ideas, promoting a bottom-up creation process. For example, the U.S. Department of Transportation launched a crowdsourcing platform called IdeaHub that allows employees to post ideas and suggestions. Cities could apply the same process after deploying new tools for their employees, allowing municipal workers to identify common problems and suggest improvements.

By using human-centered design, cities can greatly improve the usability and effectiveness of the tools they distribute to workers, getting more value from municipal dollars. And, perhaps more importantly, human-centered approaches engage everyday employees in important city decisions, making local government more accountable and democratic. [G|I](#)

Chris Bousquet, a research assistant/writer at the Ash Center for Democratic Governance and Innovation at the Harvard Kennedy School, contributed to this column.

Stephen Goldsmith is a professor at Harvard Kennedy School and director of the Innovations in Government Program and Data-Smart City Solutions. The former mayor of Indianapolis, his latest book is *The Responsive City: Engaging Communities through Data-Smart Governance*.

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Yessica Jones

CIO, Arkansas

Yessica Jones has served as director of the Arkansas Department of Information Systems since November 2016, first in an interim capacity, and then officially appointed to the post in March 2017. Now with nearly six months under her belt, she's talking chatbots and artificial intelligence in government, and offering practical tips to help states get mobile-ready.

1 A NASCIO study released late last year cited more than half of state CIOs saying that getting their apps mobile-ready is a high priority for 2017 — where does Arkansas stand with this?

This is a big priority in Arkansas. A 2015 estimate showed that almost 73 percent of adults and homes in Arkansas were wireless-only. That's third in the nation only behind Texas and Wyoming. For children under 18 in such homes, Arkansas leads the nation at almost 89 percent.

With statistics like these, it was imperative for Arkansas to develop and implement a “mobile-first” strategy pointing to where we are now, where we want to go and how we want to get there. The mobile-first strategy was our starting point toward an enterprise approach to mobility. We want our focus to be geared toward making sure the user experience on small screens is just as accessible and usable as on a desktop.

2 What tips do you have for other states heading down the mobile-first path?

Understand your citizens. Conduct focus groups to learn what the pain points are for key groups of citizens. Focus on the areas of greatest need first.

Design for the enterprise. Citizens don't care what agency or division they are dealing with. They see government as one giant entity. They don't care about state and local boundaries, either. Find ways to integrate information and services across these organizational boundaries.

Mobile-first doesn't require a mobile app. Mobile apps are only

one piece of the puzzle. Make sure that websites and applications are responsive and work on a variety of screen sizes. Make sure that online features don't require technologies that don't work on mobile.

3 Has Arkansas started using chatbots, and if so, how?

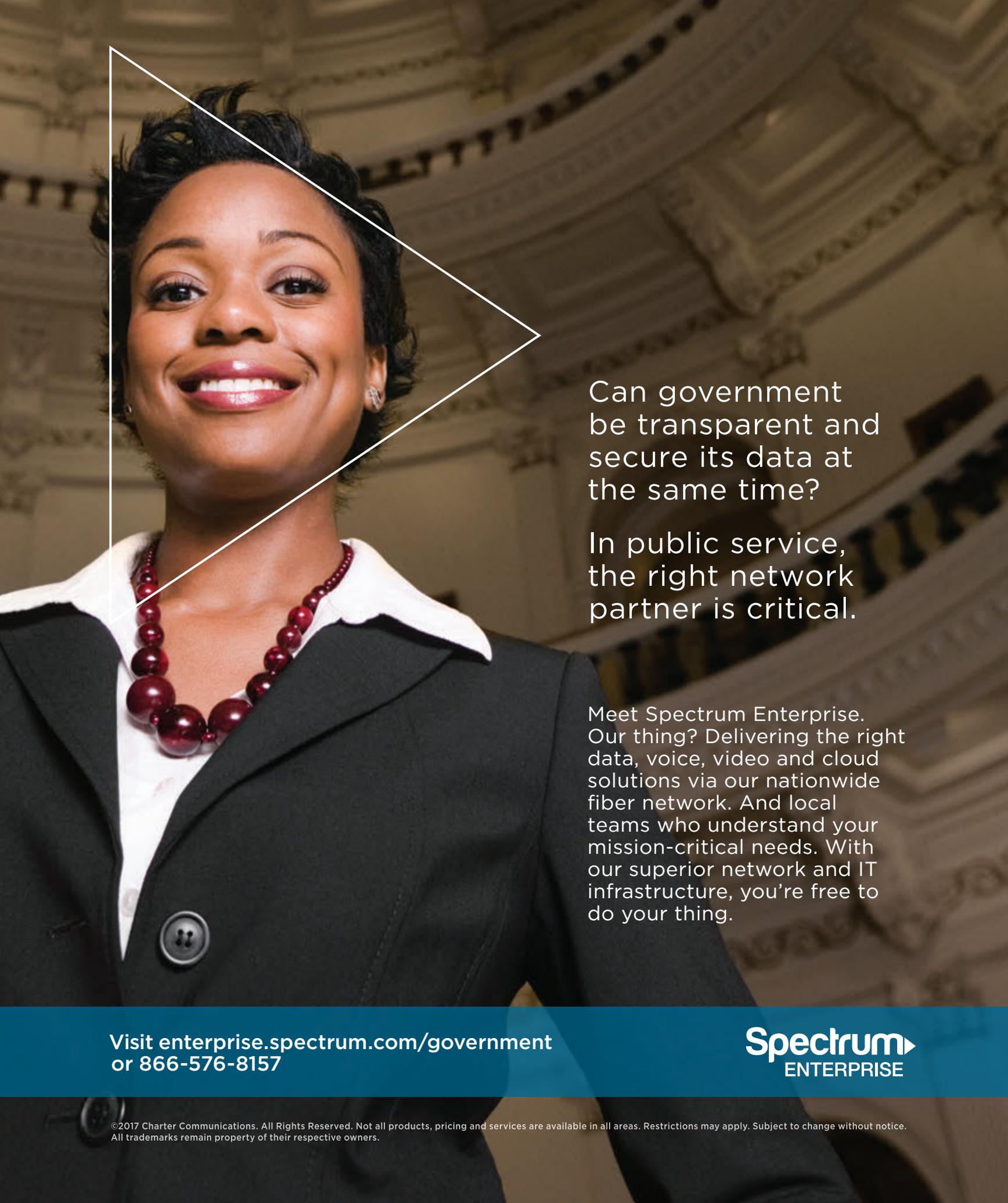
Arkansas actually launched one of the very first chatbots for government back in 2013. At that time, Gov2Go was an SMS chatbot that could answer basic questions like “Who is my representative?” and “Where do I go to vote?” The technology wasn't quite there to make this feature valuable at the time, and it was replaced with the current version of Gov2Go in 2015. However, a new, smarter version of that chatbot is in the planning phases.

4 How can government leaders start to harness artificial intelligence to serve their constituents?

Customer service is a good place to start. Think about agencies that have large call centers or support operations that answer common questions over and over again. **let**

— **Jessica (Jones) Mulholland**,
Web Editor





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Sometimes
major benefits
come from minor
investments.



IN these days of agile development, with Silicon Valley preaching the virtues of failing fast and moving on, it's hard to see a place for the traditional great big IT procurement in government.

"There are a ton of applications that are being produced daily that perform simple functions for government. There are a ton of small projects that you can do that have

a potentially large impact," said Mike Barba, a business consulting senior manager at Grant Thornton.

Big projects have gotten a bad reputation over recent years. They can be hard to justify, and when they fail, they fail on a grand scale. "Sometimes if you try to boil the ocean, you can get lost within the projects. People forget about the outcomes they are trying to achieve. They think about

BY ADAM STONE

goals and milestones but forget about the business value," Barba said.

Across state and local government, IT leaders these days are doing just the opposite. They are thinking small, implementing lightweight tech fixes that generate big returns. Let's take a look at five projects that demonstrate how a modest investment in technology can sometimes yield substantial results.

EYE IN THE SKY

Bakersfield, Calif., allows citizens to shoot off fireworks on a modest, reasonable scale. That gives some people the idea that they are free to blow up just about any old rocket they please, and that's a problem for the fire department.

"On the 4th of July you have a large number of folks on the streets using fireworks in a legally authorized manner. But then you have the folks who use large, almost professional-grade mortars and other explosives," said Fire Chief Doug Greener.

Policing the situation is legally tenuous. The city can issue an administrative citation with fines up to \$1,500 if it can catch the miscreants, but that's hard to do. "We show up in a cul-de-sac and there is smoke and debris and 50

people standing around. Who shot that rocket off? It's very difficult to nail down," Greener said.

Last year the city opted for a low-cost fix in the form of two \$1,500 drone aircraft. Each comes with a high-def camera and a tablet that can be mounted in a command vehicle. "In terms of technology it is fairly reasonably priced for what it does," Greener said.

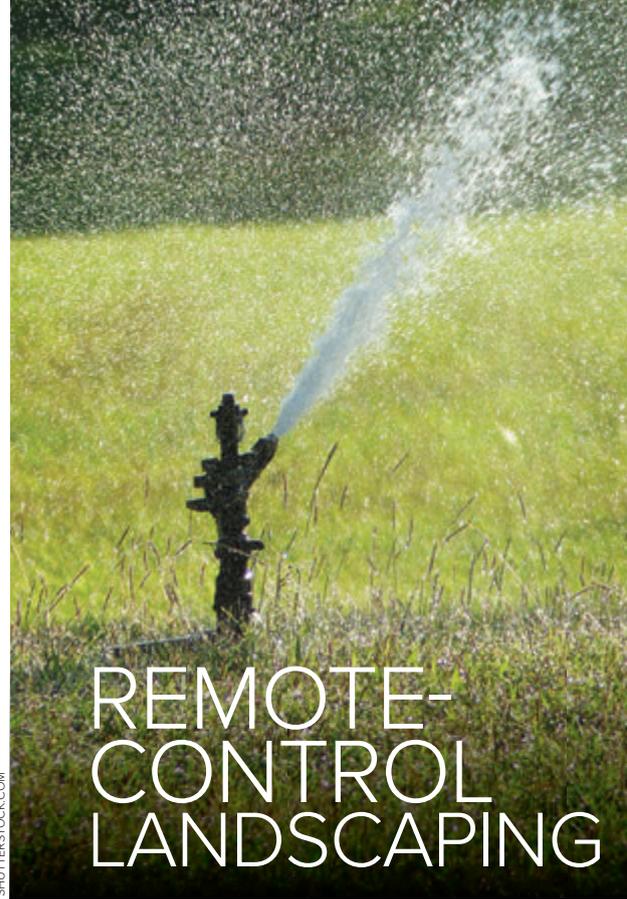
A shakedown flight last July 4 proved that the drones may be an asset in the effort to control over-the-top fireworks. "We really were able to get a very quick 360-degree view of a good portion of the city, and we could see that the illegal fireworks activity was truly citywide," Greener said. "In fact, in an after-action report we talked to the council and advised them that this is not just any one part of town or

any specific neighborhood. This is a widespread issue."

Fire officials had long suspected that this was true, but they needed to prove it in order to make the case for future Independence Day resources. "You can say it all day long, but unless you can show it visually, it doesn't have the same impact."

While the fire department is still pondering privacy issues surrounding drone use, Greener is convinced this light-weight technology will help his people subdue a messy situation.

"We could carpet the city with firefighters but it would be very, very expensive," he said. "When you consider the price of this technology, and you weigh that against personnel costs, this is going to be a very cost-effective way to boost our process and make us more efficient."



REMOTE-CONTROL LANDSCAPING

Welcome to Travis County,

Texas, (pop. 1.1 million) where outdoor amenities rank high: There are roughly 40 parks here spread out across some 1,200 square miles.

It's up to the park rangers to water all that grass. They are the ones who turn the sprinklers on and off, and it's a daunting task. "You can imagine it is very time-consuming. You have to drive a lot," said county CIO Tanya Acevedo. "For park rangers, this is not what they want to spend their time doing."

The county found a tidy answer to this geographically sprawling problem. It assigned IP addresses to park sprinklers in order to make them operable from a remote location.

The IP-enabled sprinklers became possible with the completion of a county-wide fiber backbone that was years in the making. "Now that the fiber is built out and we can put IPs on sprinklers, the rangers no longer have to drive hundreds of miles. They can literally operate it through a browser," Acevedo said. "So this allows them to focus on other things, like beautifying the parks and making them safe."

The rollout, which should be completed by the end of the year, will also enable the county to make better



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TAPPING ACADEMIA

When Rhode Island tech leaders seek maximum bang for minimum buck, they turn to local universities. Students aren't just low-cost labor. They're also a source of fresh perspectives.

"We are trying to build our talent pipeline with innovative, creative and technologically savvy people," said Kevin Parker, Rhode Island's director of government innovation. "If we went to a traditional consulting company for our technology problems, we may not get that same organic diversity of thought. This helps us to shift the cultural mindset, to shift the way we think."

He described a recent crop of student interns as a model of how this works. "These are young people with fascinating backgrounds," he said. "For example, Nick Sarazen writes music professionally and is a cognitive, linguistics and psychological science student at Brown University. We are seeking very diverse perspectives, which helps us introduce new ideas to the work we are doing."

By garnering a diverse group of students, the innovation team can drive new and unexpected outcomes. "We want to make enhancements to the user experience in the RI.gov platform, so we have our designer-in-residence, Sherry Wu, from the Rhode Island School of Design, who has brought new ideas and new bandwidth to help create an e-government solution that makes sense to our end users," Parker said. "We often struggle with having a human-centered design approach to citizen interaction. By partnering with the student population, we can facilitate emerging approaches and get a fresh set of eyes."

As of spring 2017, the department had three student interns on the books, with several more planned for the coming months. "We have seen the traditional gargantuan tech projects that go on until the end of time," Parker said. The student-centric effort offers a "lighter, more agile approach."

In addition to the internships, the department also reaches out to the local

academic community through its Government Innovation League, launched in February. Through the program, about 20 staffers from 10 government agencies have committed to spending 20 percent of their time in the state's innovation office. They come with specific problems, and the innovation team helps to pair them with local students who bring solutions.

Finally, the innovation team is looking to tap directly into the resources of academia by offering up government case studies for classroom use.

"We want to take the interesting prob-



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lems in government and incorporate them into classes," said Billy Watterson, director of programs in the Governor's Office of Innovation. "For example, we are always looking for ways to make it easier for residents to find answers to their questions. So we are looking to partner with university programs where students use natural language in computer science to look at problems like that."

Government can see big gains by tying itself this closely to the academic world. "It's a way to get your foot in the door, to show students that you can in fact get interesting things done in state government, where we always have a challenge in trying to attract top talent," Watterson said.

use of its resources. "When someone has to drive to each location, you can only be so good in terms of when you turn it on and when you turn it off. Now when it rains we can turn them off right away, rather than have them run for hours while it is raining," she said.

County officials didn't have sprinklers in mind when they deployed the extensive fiber backbone. They were just trying to meet the rising expectations of the citizenry, many of whom reside in the famously progressive city of Austin.

"The people who go to these parks are high tech, they want wireless capabilities, so we were really meeting that need. Enabling IP-based sprinklers was sort of a happy afterthought," Acevedo said. "The first intention was just to service the constituents and get them the wireless connectivity they needed."

Looking ahead, IT leaders see a range of additional uses for their high-speed connectivity. "We want to put sensors on the manhole covers so anytime they are opened, it will activate a security notification. We are looking at attaching cameras, and also using it to control lighting, heating [and] air conditioning" in county facilities, Acevedo said. "We see a lot of possibilities."

AN EASY GIS FIX

Each year the U.S. Department of Housing and Urban Development asks cities to take a point-in-time census, a head count of the local homeless population. And each year Aurora, Colo., takes its best shot and comes up short.

Logistical difficulties have made it hard to get an accurate count across this 155-square-mile area, and while it seemed like technology might afford some kind of an assist, city leaders were wary of embracing any big-budget solution. “We had been talking about wanting to go higher tech, but with a lot of new technologies just the thought of doing it is overwhelming,” said Homelessness Program Director Shelley McKittrick.

The city found its fix in a low-budget technology

currently emerging as a go-to solution for municipalities seeking lightweight means to address a range of large-scale issues. The solution: GIS, or geographic information systems.

Cities have increasingly turned to GIS to help solve diverse problems. Loudon County, Va., uses it to help farmers identify the best land for growing crops. Georgia officials employ GIS to manage flood plains and prioritize transportation management issues.

Aurora used Esri’s Survey 123 tool, a GIS-enabled smartphone app, to help its volunteers conduct the latest point-in-time survey. The results were dramatic: A homeless population previously estimated at 420 individuals swelled to some 526 people.

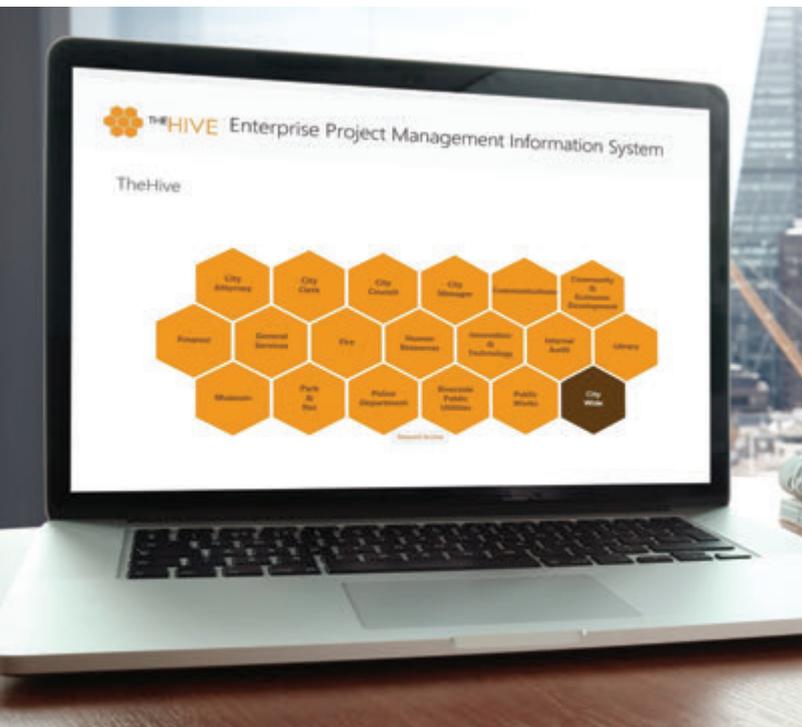
“We counted a lot of people who otherwise would not have been counted, people whom we wouldn’t have known were there, and next year we expect to get even more,” McKittrick said. Moreover, the technology driving these improvements was extremely small and simple. “Because we were able to train people on the fly very easily on the day of the count, what seemed like a pretty audacious goal became a little easier and a little more fun.”

On the day of the survey the city sent out 40 volunteers riding in eight vans, all equipped with phones bearing the survey. In addition to a short questionnaire, the app incorporated the ability to pinpoint the location of

the homeless individual on a map in real time. This allowed volunteers to work more efficiently, without risk of duplicating one another’s efforts.

Thanks to the GIS app, the teams discovered trends they had not seen in the past, including a local parking lot that had become a gathering place for individuals sleeping in their cars. That information not only rounds out the census but also helps the city to consider how it will address homelessness going forward.

“We can start to say, ‘OK, this is what we need. We need this many units of subsidized housing, we need this many jobs for the people who are able to get back to work.’ Without this data, we didn’t know any of that stuff,” said McKittrick.



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REPURPOSED SOFTWARE

Sometimes the business

of government gets so big, it can be hard to keep track of it all. That was the situation in the Riverside, Calif., Innovation and Technology Department in mid-2015. Every Monday the team would gather to review Excel spreadsheets tracking the status of some 130 projects, from new systems to new apps to software upgrades.

This was messy and ineffective, so department leaders went scouting for a simple, inexpensive fix. Turning

to SharePoint, a Microsoft product they already owned, they built “The Hive,” a workflow tool that consolidates the department’s project management information.

Here’s the kicker. Other city departments got a look at The Hive and realized they needed a similar solution, so the IT team scaled it up. Two years later the system is hosting data on 2,800 projects from virtually every city agency.

“Once the users got excited, that started the



THE BIG PICTURE

TIME OF DAY

AM EARLY

AM PEAK

MIDDAY

EARLY NIGHT

LATE NIGHT

CAPACITY PER ROUTE



ALL CAPACITIES



Visualization takes open data to the next level.

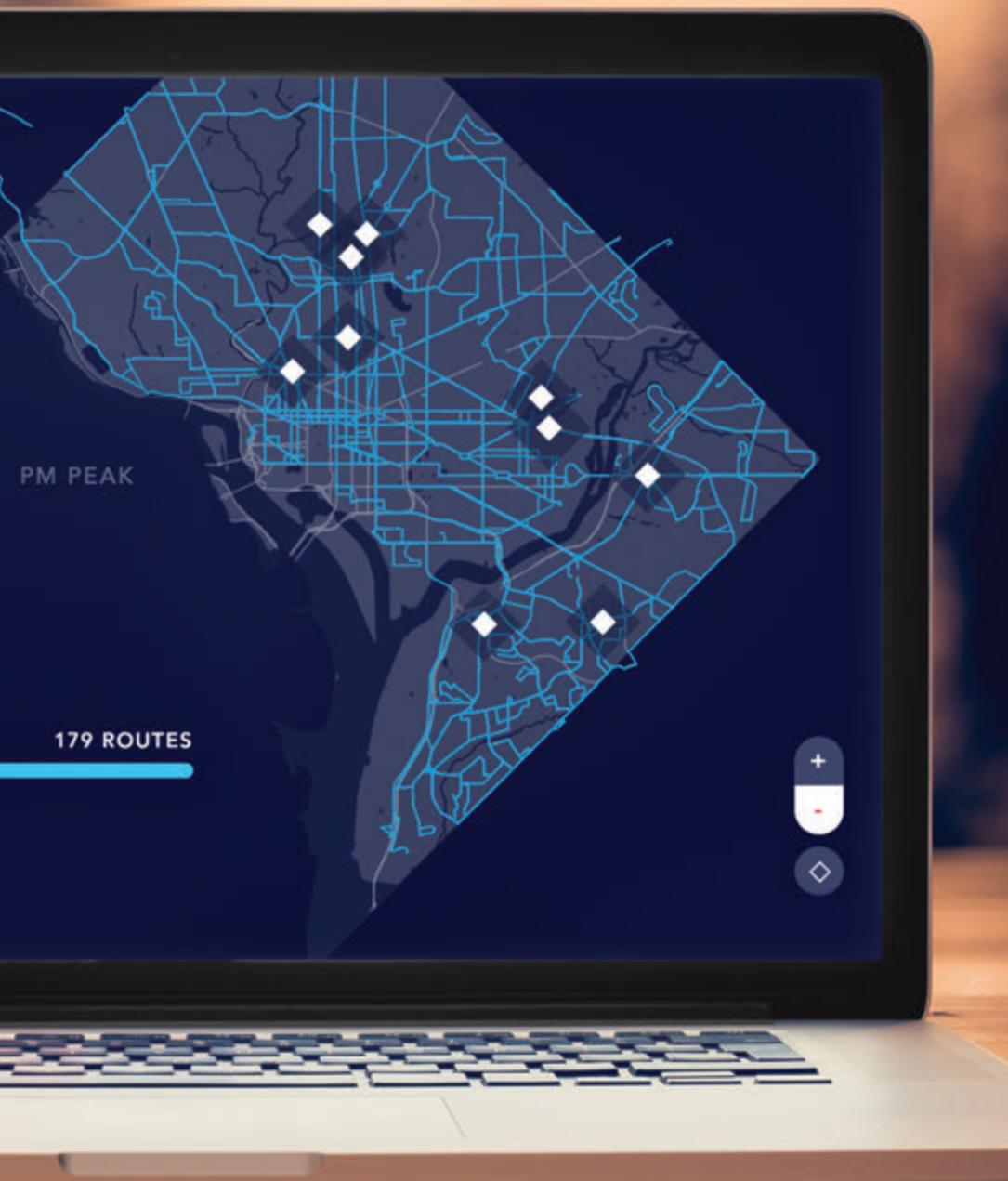
By David Rath

When Stephen Goldsmith was deputy mayor of New York City in 2010 and 2011, the city was working on processes to make data available to the public. “We have now gone from fulfilling that transparency goal, which has its own value, to thinking more fully about open data in its role for creating better community outcomes,” he said. That means considering how a sister agency could use data or how community groups could use it to identify and solve problems in their own neighborhood.

“You begin to think about data as driving value, as contrasted to data as transparency for its own sake,” he said. “Then visualization becomes critical. In fact, data without visualization is barely open data at all.”

Goldsmith, who is now a professor of practice of government at the Harvard Kennedy School and director of the Innovations in American Government Program, pointed to Los Angeles’ GeoHub as an example of a site whose purpose is organizing data around what is most important to a city, which is location. He sees the open data maturity model following a similar path to the growth of e-government itself – it starts focused on one narrow goal, and then gradually becomes part and parcel of how government operates.

Government Technology took an in-depth look at five interactive sites that give both government agencies and their constituents fresh views of their data. We also interviewed the developers about the thinking behind their creation.



BURGH'S EYE VIEW

If a neighborhood association in Pittsburgh is concerned about gang activity, its members can now map data about graffiti and crimes such as car break-ins using a new Web visualization tool called Burgh's Eye View.

Determined to make its open data sets more valuable to residents and community groups, the city's Analytics and Strategy team used open source tools to create a Web application that offers residents visual representations of everything from crime and other public safety incidents to 311 service requests, building permits and code violations. Data updates refresh the maps every night or even every hour.

Burgh's Eye View comes in two flavors, one that is public-facing and another for city departments with slightly different information. (For instance, in the public version, crime data is made anonymous to the block level for privacy reasons.) The idea actually developed after requests from the police department for better tools.

"There was a variety of data coming from non-police sources that could be very useful to the police, including 311 calls," said Laura Meixell, assistant director of performance improvement in the Department of Innovation and Performance.

Officers in the field as well as those in the intelligence unit were interested in getting that non-emergency request data to look at patterns. "Police and other first responders were very interested in data on abandoned buildings and condemnations, as well as places where the Bureau of Building Inspection had identified serious structural issues, so they would know that before entering the building," she said.

The public-facing version was launched in October 2016, and Meixell said her team is building up a constituency via good old-fashioned shoe leather. "I had my whole staff going around with community affairs teams to community meetings," she said. "If a neighborhood association held a meeting, we would show up and request 15 minutes

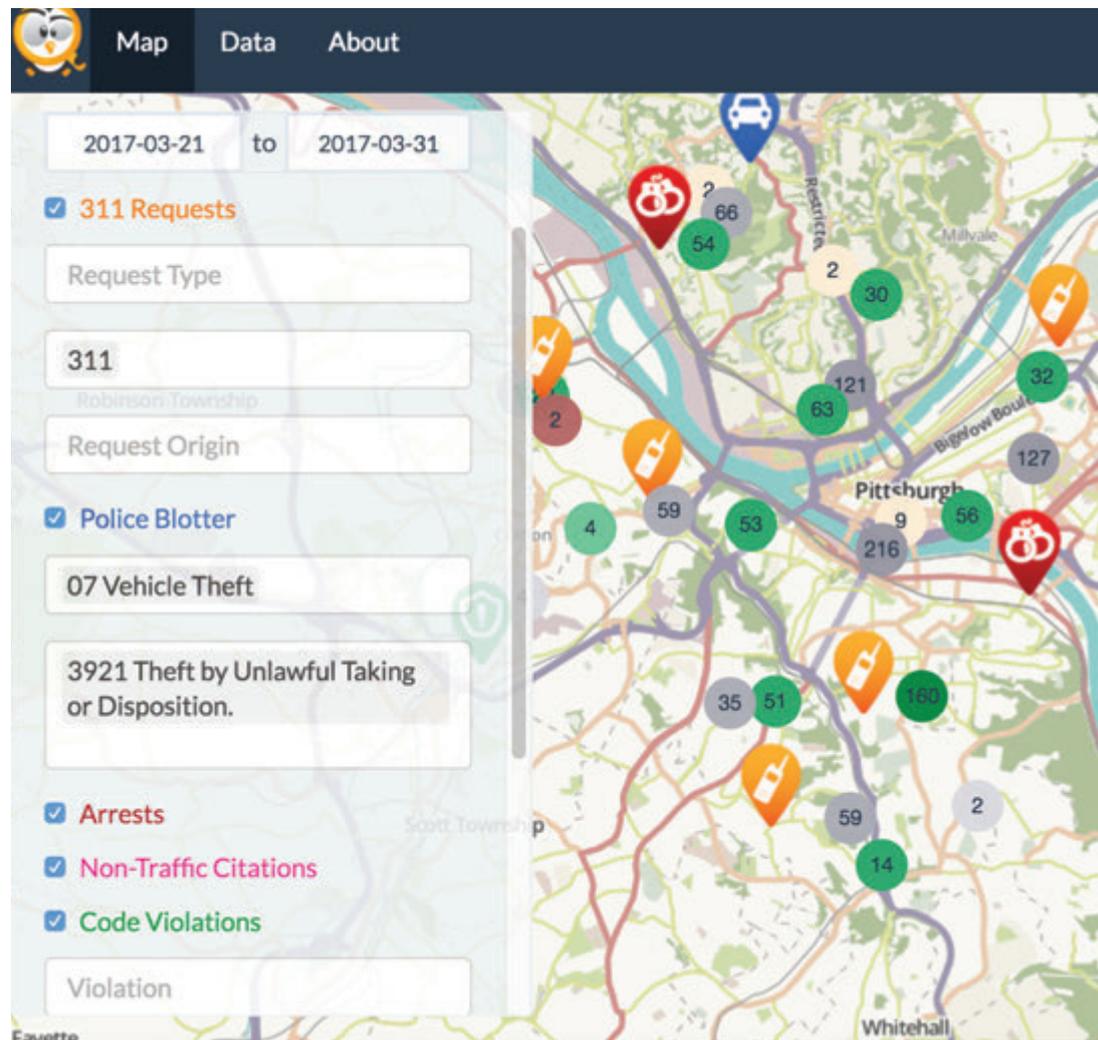
to give a presentation. We want to help them understand how city data and operations can influence how they do their jobs."

As an example, neighborhood organizations often try to help homeowners with "tangled title" situations, in which many generations of a family might live in a house, but it is unclear who owns it and should pay taxes. "Neighborhood organizations have had success with that and their work can be driven by data we have," she said.

The site already has more than 10,000 users. "One organization asked us to enable customized embeddable mapping, so they could zoom in on their neighborhood and include the characteristics they were interested in, and embed

that on their organization's website," Meixell said. "That is definitely doable."

The site was created in-house using RStudio, an open source integrated development environment. "There are a lot of companies that would charge a lot of money to put this stuff together," Meixell said. Although you need skilled staff members, the barrier for that has been coming down when it comes to data visualization, she believes. "For the scope we are building here, there are cheap and open source products you can start using right away. We started with one guy who had taken a course in grad school, but no one else had. We just sort of taught ourselves to do this."



The in-house-created portal was born out of requests from the Pittsburgh police department for better data tools.

Building a Successful Mobile GIS Strategy

How combining mobility and GIS is enabling local governments to achieve better coordination, planning and decision-making.



When Sussex County, N.J., suddenly needed to close a bridge for safety reasons during Hurricane Irene a few years ago, the GIS department simply posted a map of the bridge location and sent an alert to citizens via their mobile phones, advising them of the situation and suggesting they find alternate routes. The speed and efficiency of the alert allowed the county to steer citizens away from a potentially dangerous situation while also preventing a traffic bottleneck that could have put even more lives in danger.

This is just one example of how local governments are combining mobile and GIS technologies to better address both ongoing and emerging issues and communicate with the public more effectively.

Mobility is a growing mandate and priority for government jurisdictions. And combining mobile technologies and data in meaningful ways is the key to enabling government jurisdictions to achieve better outcomes. Over the last several years, mobility and GIS have evolved dramatically, but often independently. Today, more cities, counties and states are combining the two technologies to facilitate better and faster data collection, analysis and sharing. This helps improve internal operations, public safety and citizen services.

The mobile app Street Wise lets citizens track road construction activity around L.A. so they can choose driving routes that will help them avoid delays.



Building the Strategy

Mobile GIS can help initiate a paradigm shift in how cities operate, make decisions and engage citizens, but doing so effectively means jurisdictions must first develop a solid strategy. Fortunately, building a mobile GIS strategy doesn't need to be complex or difficult. Esri's ArcGIS mapping and analytics platform, which includes a powerful GIS server — plus a dedicated web-based GIS infrastructure — enables local jurisdictions to easily build a secure and effective mobile GIS strategy.

Local jurisdictions around the U.S. use mobile GIS from Esri to streamline and improve critical government functions, including planning, coordination, navigation, data gathering and monitoring.

✓ Planning

Los Angeles' city departments combine GIS and mobile technologies to enable better city planning, resource management and decision-making. Using mobile GIS gives city staff, businesses, app developers, nonprofit organizations and the public access to the city's location-based data. According to L.A. city leaders, the effort is transforming the way people, businesses and government interact.

Emergency workers in L.A. are among the primary beneficiaries. Firefighters responding to a structure fire, for example, now use iPads or other mobile devices to instantly locate important information like building inspection status and the location of the nearest fire hydrants, sewer lines and streetlights.

Mobile GIS also enables municipal officials in Los Angeles to search and map city infrastructure, safety data, businesses, transportation services, parks and recreation facilities. In addition, the mobile GIS platform facilitates interdepartmental data sharing, helping the city deal more effectively with complex issues like public safety and homelessness. Some of the city's data also is shared with citizens through innovative services that improve quality of life. For example, the mobile app Street Wise lets citizens track road construction activity so they can choose driving routes that will help them avoid delays.

• Coordination

Historically, when Sussex County, N.J., wanted to alert citizens about road closures or other events that might impact them, the county posted a PDF map to its website.

Unfortunately, the static maps were often outdated soon after they were created. Today, the county uses ArcGIS Online to post current, dynamic maps. Citizens can use the maps to access up-to-the-minute information about road or bridge closures via mobile device. The service gives citizens better information about routine construction and maintenance, and provides vital alerts during emergency situations such as those experienced during Hurricane Irene.

ArcGIS Online also gives Sussex County staff immediate access to geospatial information and has become a platform for collaboration. The county created an internal map service that is published in ArcGIS Online and automatically updated. Now, instead of waiting for the county GIS department to create maps for them, staff members can access and manage their own GIS data from either a desktop or mobile device using the online service. They can also share map data and comments in real time using the ArcGIS Online group feature.

Navigation

When snowstorms hit Prince George's County, Md., 25 inspectors hustle to survey over 2,000 miles of county roads. In the past, inspectors completed the task by driving around their districts noting snow conditions on a spreadsheet, which they submitted to the county's Emergency Operations Center upon return to their district offices.

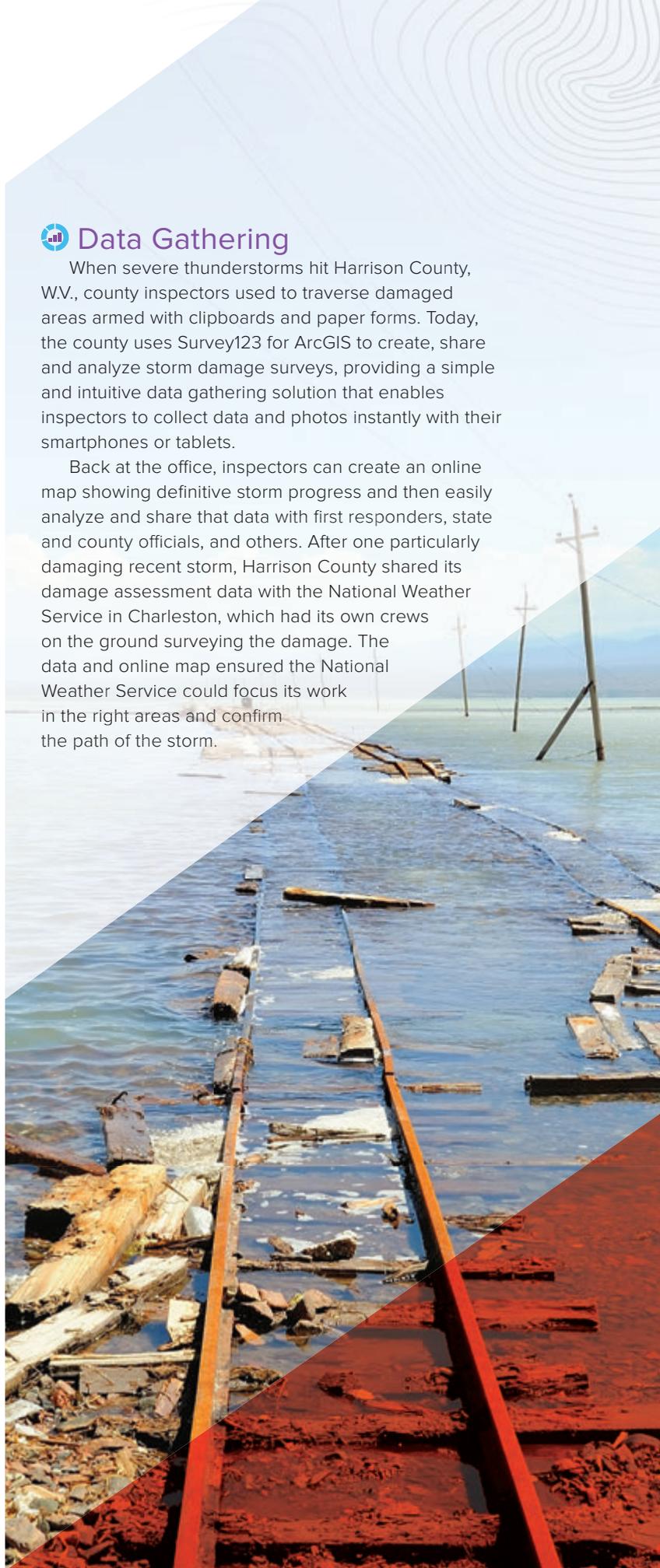
Today, inspectors capture real-time snow condition information in the field with a tablet, using ArcGIS Online, Collector for ArcGIS and Operations Dashboard for ArcGIS. County workers can even snap pictures to document specific issues. The data is sent to the Emergency Operations Center immediately.

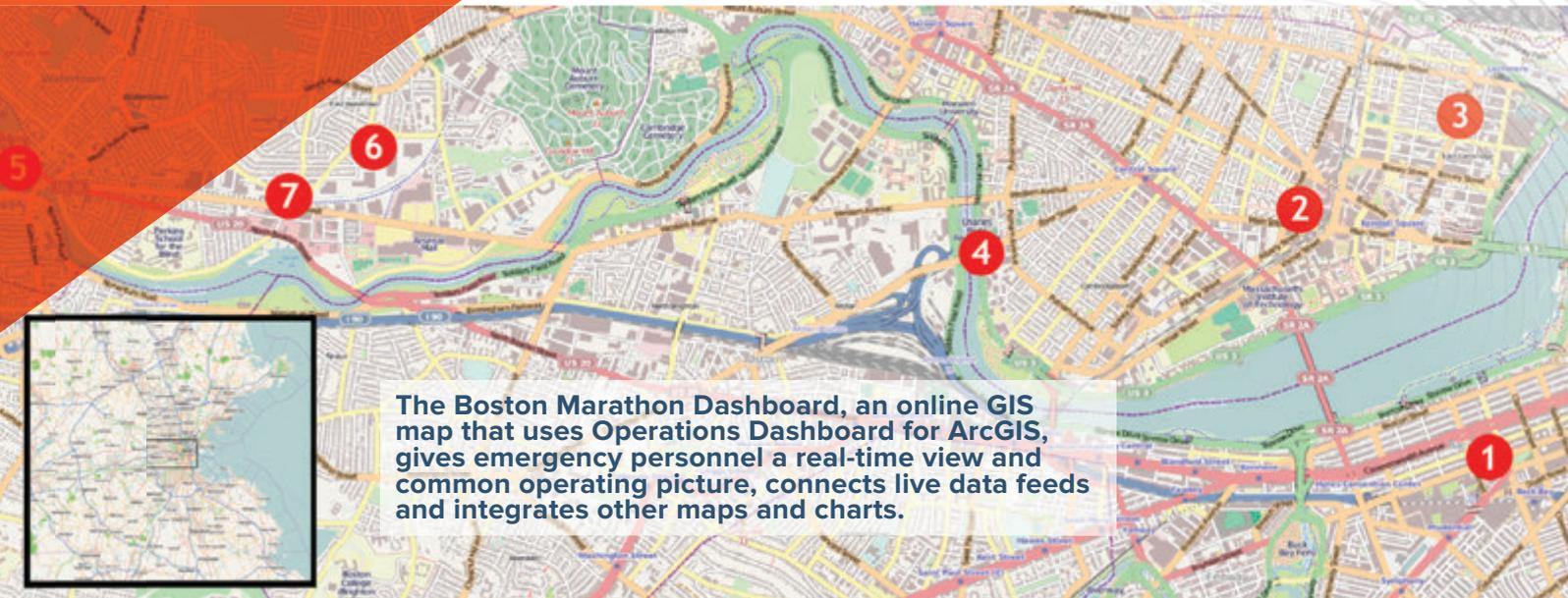
At the county operations center, a map of all five county districts appears on a dashboard, giving snow operations managers the information and view they need to prioritize and direct snow removal to the hardest-hit areas. The application allows the county to respond to snow emergencies faster than ever before. Snow operations managers view updated conditions on maps within clearly labeled, numbered routes. They can prioritize where to dispatch plows and keep the database updated entirely via the map. The application also is used to report incidents like downed power lines and traffic accidents.

Data Gathering

When severe thunderstorms hit Harrison County, W.V., county inspectors used to traverse damaged areas armed with clipboards and paper forms. Today, the county uses Survey123 for ArcGIS to create, share and analyze storm damage surveys, providing a simple and intuitive data gathering solution that enables inspectors to collect data and photos instantly with their smartphones or tablets.

Back at the office, inspectors can create an online map showing definitive storm progress and then easily analyze and share that data with first responders, state and county officials, and others. After one particularly damaging recent storm, Harrison County shared its damage assessment data with the National Weather Service in Charleston, which had its own crews on the ground surveying the damage. The data and online map ensured the National Weather Service could focus its work in the right areas and confirm the path of the storm.





The Boston Marathon Dashboard, an online GIS map that uses Operations Dashboard for ArcGIS, gives emergency personnel a real-time view and common operating picture, connects live data feeds and integrates other maps and charts.

Monitoring

After two bombs exploded at the finish line of the Boston Marathon in 2013, killing three people and wounding 260, government officials and emergency workers pledged they would not let a similar incident happen again.

In response, the Massachusetts Emergency Management Agency produced the Boston Marathon Dashboard, an online GIS map that tracks every aspect of the marathon as it happens. Using Operations Dashboard for ArcGIS, a Windows and web browser-based app that's part of ArcGIS Online, emergency personnel get a real-time view and common operating picture, connect live data feeds and integrate other maps and charts. The app enables Boston emergency workers to track police cruisers, ambulances and other emergency vehicles. It also includes layers of real-time data, information that's clickable and zoomable, and a map that can be viewed and updated from any device by hundreds of people.

In addition, the dashboard hosts dynamic web map layers including live weather and traffic, real-time tracking of runners and emergency vehicles, and information about

emergency situations. There are 20 static layers that can be turned on or off, as needed, to show helicopter landing pads, National Guard staging areas or medical facilities. Responders also can monitor the capacity of emergency shelters, as well as track status changes and find contact information for the facilities.

Creating Smarter Jurisdictions

Combining GIS and mobile technologies enables local governments to collect vital data in real time — and operationalize that data quickly to power better decision-making, situational awareness and citizen services. But these benefits can be difficult to realize without a mobile GIS strategy to guide and coordinate your efforts.

Esri's integrated mobile GIS suite gives jurisdictions a simple way to launch a mobile GIS strategy that provides agencies with powerful new ways to manage data, eliminate silos, reduce duplication, improve communication and advance projects. Ultimately, the right mobile GIS strategy equips agencies to gather, analyze and understand data faster and more effectively than ever before.

This piece was developed and written by the Government Technology Content Studio, with information and input from Esri.

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Visit go.esri.com/mobilegov-strategy to learn more about building a successful mobile GIS strategy.

Learn what Esri can do for you!



The state's new data visualization brings context to \$70 billion in budget information.

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OHIO'S INTERACTIVE BUDGET

A year ago, if Ohio residents went looking for state budget details, they could find them in static documents and PDF files, but many of them were outdated by the time they were posted online. Today, citizens can get a much fuller picture, with the Ohio Office of Budget and Management's (OBM) Interactive Budget portal.

What was definitely unavailable in previous budget documents posted online was context, said Derek Bridges, program administrator for the Ohio Administrative Knowledge System, the state's enterprise resource planning system. He also has responsibility for several business intelligence initiatives. "It is fairly common for governments to build transparency sites, but they focus on which suppliers government gives money to. It was our stance, however, that those sites don't tell the whole story of where the state's money comes from, how it gets appropriated and where it goes. There is no single place to find that breadth of information."

Creating a data visualization of the budget was something OBM executives had wanted to do for some time, Bridges said. "The opportunity presented itself because we were looking to move up the curve in terms of our maturity with data visualization throughout the state," he said. "On the IT side, we were rolling out Tableau as our data visualization enterprise service. That allowed OBM, at minimal additional cost, to roll out this Interactive Budget website. They didn't have to go buy a bunch of software on their own."

In creating the site, the state tried to cast a wide net in terms of audience and make it as usable as possible to the general public, understanding that this site explains \$70 billion in annual revenue and expenses.

One budget view shows state grants paid to government entities or nonprofits, with spending broken down by payee. "The first time we showed this to people, some said that it didn't show them anything," Bridges recalled. "Our argument was that

it tells you a lot. These are all the grants and subsidies that the state distributes to universities, school districts and other entities. This tells the story. More than 80 percent of our spending is going to these subsidies. This gives you a picture of the variety of places the money is going."

The site is organized with a drill-down hierarchy. On the left margin, you can drill back up through layers to where you started. "We try to leave the user breadcrumbs," Bridges said. "This is explaining a lot of data. We didn't want people getting lost."

Users can download a PDF version of any visualization with one button click. "We wanted to allow people to grab a picture," Bridges said, "understanding that they may navigate to a point, and then come back later. It might take them time to find the visual they were looking for." Having that PDF or a printout should make it easier, he added.

The Interactive Budget is just the first step for Ohio. Since the Department of Administrative Services purchased a Tableau server and the state has rolled out enterprise data visualization as a service, 19 state agencies have a site on the server. Two hundred employees have desktop licenses, and 100 employees have received training.

The new tool, which shows 26 health-related measures, is used by four cities — but has a goal of finding a place in hundreds.



CITY HEALTH DASHBOARD

A new online data visualization tool, the City Health Dashboard, has been created to improve city-level understanding of health and empower mayors, city managers and health officials to enact policies that target the risk factors and health conditions impacting their communities.

The website, created by the New York University School of Medicine's Department of Population Health, presents 26 measures related to health across five areas: health outcomes, health behaviors, clinical care, social and economic factors, and physical environment. The data include traditional health metrics such as premature mortality, teen birth rate and adult obesity prevalence, as well as non-health measures that impact health, including unemployment rate, third-grade reading proficiency, neighborhood walkability and air quality.

The initial version of the dashboard includes data for four cities: Flint, Mich.;

Kansas City, Kan.; Providence, R.I.; and Waco, Texas, although the goal is to scale it up to include hundreds of cities.

Developed with NYU's Robert F. Wagner School of Public Service, in partnership with the National Resource Network, the dashboard puts into a framework data that hasn't been visible to city-level managers before. "Many of these data elements are available at the county level, but city managers are responsible for making policies that influence the people who live in their boundaries," said Marc Gourevitch, chair of the Department of Population Health at the NYU School of Medicine and principal investigator for the City Health Dashboard.

If a city is in the far southwest corner of a county that is four times as big as the city, the obesity rate data for the county is not that helpful, he said, and collecting that kind of data can be very expensive and time consuming. "The goal was to

take data sets that power county-level data and code it to the city level."

City Health Dashboard is a Ruby on Rails Web application with a Postgres database. For data visualizations, it uses Google Maps and amCharts. The app was designed by L+L Design and built by Andy Glass.

The visualization aspects of the site are key to its value, Gourevitch said. Imagine you are a health official in Waco concerned about obesity issues. Now you have a way to look at obesity rates on a map broken down by neighborhood census tract. You could also see how those trends align with maps of "walkability" or physical inactivity among people who live in these neighborhoods. "That can be illuminating if you are trying to decide what to do about it," he said. "What are the barriers to physical activity? What can be done about it? Changes could be made in terms of urban design or the creation of parks."

The tool quickly graphs overlays of metrics and tells policymakers whether there is a strong or weak correlation between them.

Speaking with city managers and mayors over the last year, Gourevitch said, it has been striking how much demand there is for such a tool. "There is real hunger for data at the city level that is standardized. This allows them to compare where they are with similar cities. If we scale this to hundreds of cities, which is our goal, it will be possible to compare health measures with those in a like city, and get a sense for how they are doing."

DISTRICT MOBILITY

The Washington, D.C., Department of Transportation (DDOT) has long sought to better understand congestion. A new interactive website tracks key performance indicators and allows district employees and citizens to get a better picture of specific metrics.

The project, which went live in February 2017, grew out of a request

from the City Council to better understand multimodal congestion in the district. "We at DDOT took that request and ran with it, and probably took it further than was originally envisioned, but we made it so it really met the needs of the agency as well," said Stephanie Dock, a research program administrator. The first aspect of the project was creating a baseline understanding of how the system is operating, with a focus on walking, biking, bus and driving. (The regional Metrorail system is not yet included.)

DDOT defined a series of performance measures that were meaningful

for the system and sorted by data that it could capture regularly and reliably for the entire district. "Having this data up on the website means that whenever someone at DDOT is doing a project, we don't need to do an initial round of data collection," Dock said. "They can begin by looking at this data."

The site allows information to be filtered easily, Dock said. Users can move between time periods. "For example, looking under congestion, and which bus routes are busiest, as you click through, you can pick times of day, and clicking through time periods, you can watch

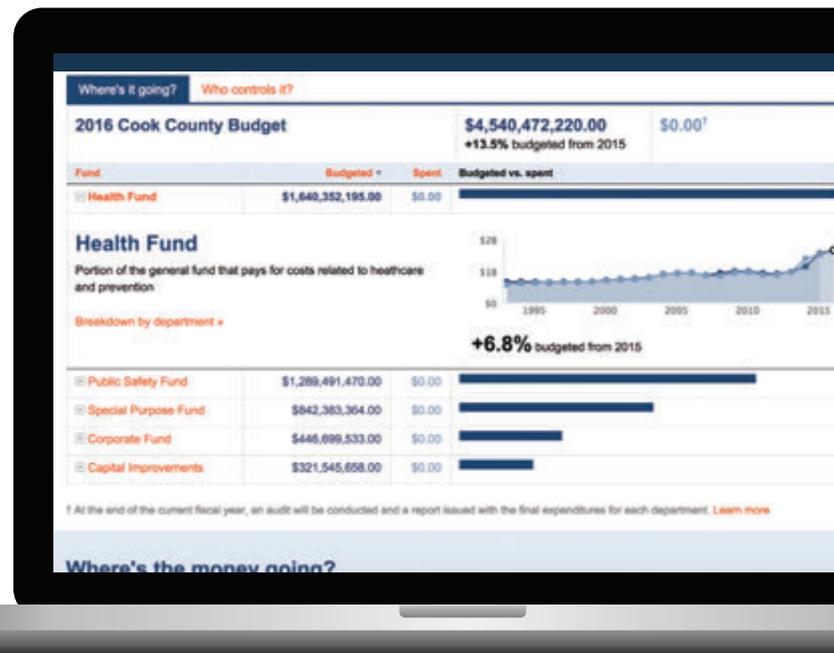
LOOK AT COOK

Several years ago, when Chicago's open data movement was getting off the ground, Web designers Derek Eder and Nick Rougeux created an application that tracked local lobbyist data (www.chicagolobbyists.org). That caught the eye of Cook County Commissioner John Fritchey, whose office asked the duo to create a tool to make the county's budget easier to understand. The result, called Look at Cook, was launched in 2012 to give citizens a tool for asking questions about local government spending priorities and a way to track that spending over time. Look at Cook tracks government budgets and expenditures dating back to 1993.

Eder and Rougeux had experience in creating data visualizations through their work at the Web development shop Webitects. Their challenge was applying those skills to dense budget documents. "Budgets are complicated, and it can be very challenging to convey that information to the public," Eder said. "The actual budget is released as a giant book, and even the summary is 300 pages long. Condensing that into something that people can meaningfully get information out of was a bit of a challenge, but one we wanted to take on."

The real value of visualization is the ability to create something that at a glance allows you to see the overall picture as

Cook County, Ill., helps answer citizens' questions about local government spending priorities in a visually driven format.



well as the trend lines, he said. "Because budgets are more than just one number every year, we allow you to dive into individual funds and departments, such as corrections, and see those trends," Eder explained. "I have found with this site and other budget visualization sites that they are the clearest way you can describe what the government is doing." For example, citizens could trace the impact of funding cuts for the Jail Diversion and Crime Prevention Division on the Corrections Department and Juvenile Justice Division.

In Cook County it is particularly important to clarify what the county is responsible for, Eder said. There is not a 100 percent overlap between the city of Chicago and the county, but most of the county is Chicago, so it can be difficult to discern

whether the city or county operates a particular hospital or jail. "Budget visualization is a great way to show what things the county is responsible for," he said.

The website is maintained by what Eder calls something of an unusual partnership. He continues to host the site while Fritchey owns the domain. Eder and Rougeux did the work pro bono and continue to help update it once a year. They used open source tools, notably Highcharts, a JavaScript charting library, and the Fusion Tables database tool from Google.

"All this information was available before," Eder said. "As a citizen, you could go down to the county's offices and look at the budget data. It was there. It was not a secret. What we did was make it more accessible."

how those routes change throughout the day. I find it fascinating which routes carry huge numbers of people in the early evening, for example."

The data will let DDOT start to overlay data sets. It can match high-ridership bus routes and travel time indexes for vehicle congestion. "If you have a really high ridership route on a very slow-moving road, adding buses isn't necessarily going to solve the problem," she said. "Then you might be adding more congestion."

DDOT worked with data visualization agency Clever Franke to develop the site. "The council gave us funding and

a timeline," Dock recalled. "We had an all-out sprint from January to September last year to figure out the measures, calculate the data and build the website. Because of that funding, we got something built that is visually appealing and simple to use and interact with." 

A new website visually showcases multimodal transportation congestion in Washington, D.C.





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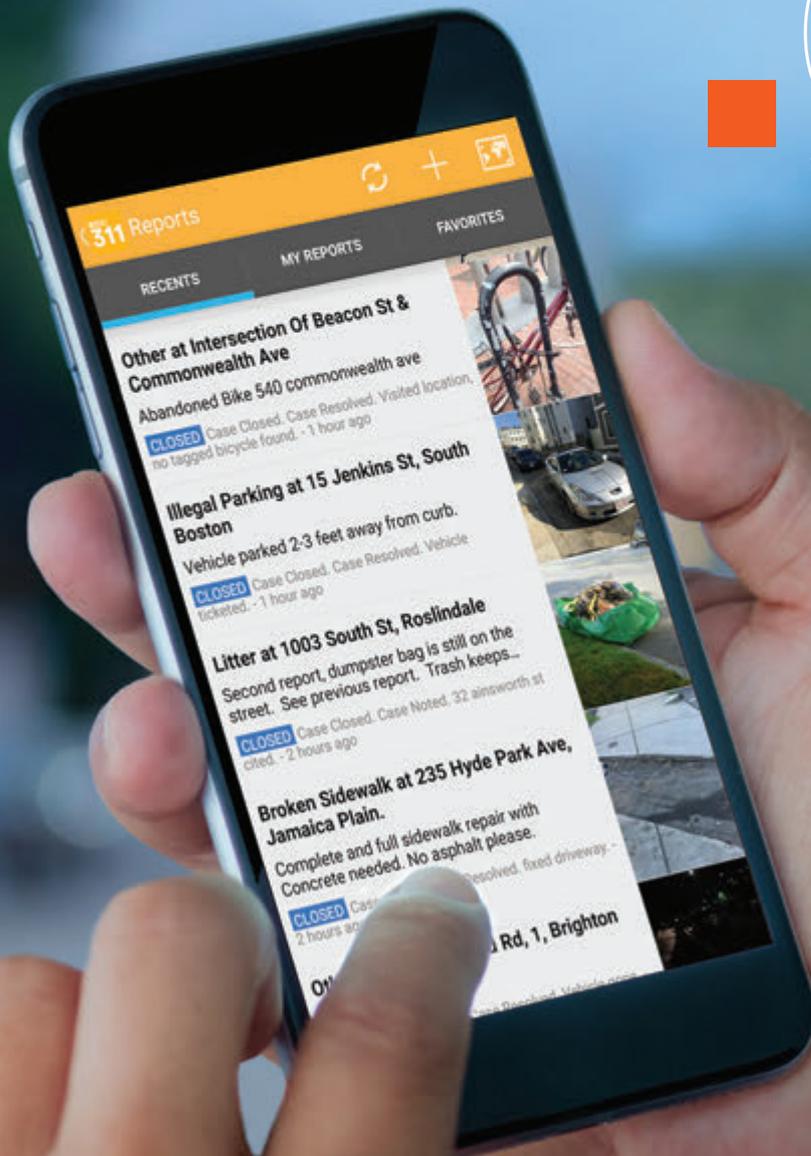
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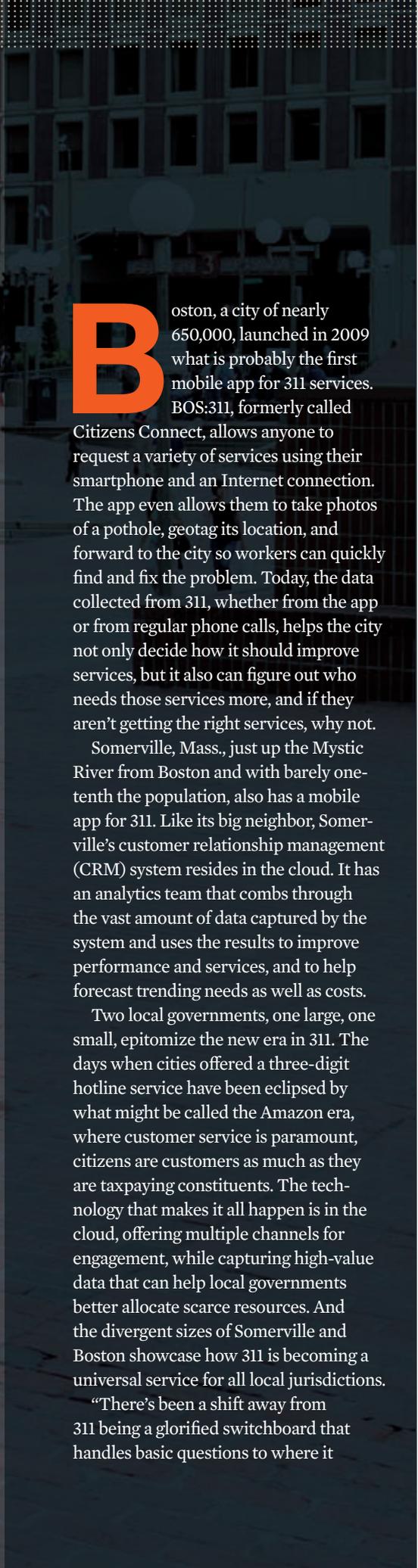


The technology that drives **311** has become more sophisticated than ever.

Can it help government deliver an Amazon-like experience?

About This Report

The Digital Communities Special Report, which appears twice a year in *Government Technology* magazine, offers in-depth coverage for local government leaders and technology professionals. It is part 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 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 facing local government leaders and technologists.



Boston, a city of nearly 650,000, launched in 2009 what is probably the first mobile app for 311 services. BOS:311, formerly called Citizens Connect, allows anyone to request a variety of services using their smartphone and an Internet connection. The app even allows them to take photos of a pothole, geotag its location, and forward to the city so workers can quickly find and fix the problem. Today, the data collected from 311, whether from the app or from regular phone calls, helps the city not only decide how it should improve services, but it also can figure out who needs those services more, and if they aren't getting the right services, why not.

Somerville, Mass., just up the Mystic River from Boston and with barely one-tenth the population, also has a mobile app for 311. Like its big neighbor, Somerville's customer relationship management (CRM) system resides in the cloud. It has an analytics team that combs through the vast amount of data captured by the system and uses the results to improve performance and services, and to help forecast trending needs as well as costs.

Two local governments, one large, one small, epitomize the new era in 311. The days when cities offered a three-digit hotline service have been eclipsed by what might be called the Amazon era, where customer service is paramount, citizens are customers as much as they are taxpaying constituents. The technology that makes it all happen is in the cloud, offering multiple channels for engagement, while capturing high-value data that can help local governments better allocate scarce resources. And the divergent sizes of Somerville and Boston showcase how 311 is becoming a universal service for all local jurisdictions.

"There's been a shift away from 311 being a glorified switchboard that handles basic questions to where it

can handle multiple channels, moving requests forward automatically, even closing out the process and informing the customer that the job is done," said Craig Cornelius, senior vice president at Eventus, a consulting firm that specializes in customer engagement. "311 is now about work order management, field services and customer satisfaction."

But turning 311 from a hotline into a platform for citizen engagement and customer service similar to what's offered by the commercial sector is not so simple. Local government still largely operates through agencies that work in silos, making it difficult to merge the latest in call center and customer service technology with government that is still shackled by legacy work and management traditions. Government still must serve all customers, and it cannot require its customers to submit requests online and not use the phone. Finally, 311 doesn't generate revenue; it's a service paid for by taxpayers, which means costs are an ongoing concern.

While it's no longer a question of whether local governments can offer advanced customer service through CRM, there is a raft of challenges that leave some wondering just how well it can be done.

The Kansas City Experience

There are a number of cities that get 311 right, but to get a real sense of where things are headed, take a look at Kansas City, Mo. The city has a 311 call center that has been operating since 2007 and handles about 10,000 calls per week. But it also allows residents to request services via the Web, a mobile app and with social media, such as Twitter. The city customers who use 311 can track the progress of their request on a map (say, a broken streetlight) or they can go online and look up the status of the number assigned to their service request.

By Tod Newcombe

But what makes Kansas City so unique is the data. With nearly 400,000 calls, complaints and service requests annually, the city can track a wide range of work and performance factors that can affect everything from workflow to budgeting and even resource allocation, according to Jean Ann Lawson, assistant to the city manager. Having used 311 for nearly a decade has given the city time to make changes to how it collects data and what it does with the information.

"Initially, it was about the input and not so much the outcome," she said. But as the city's use of 311 grew to cover engagement as well as services, the importance of the data increased, not just for city managers and departments, but for the public as well. Everyone who makes a service request is asked to complete a short survey. While the data from 311 might tell a city agency one thing about how quickly it handles a service request, public perception might be different. The surveys are repeated to see if issues are changing and customer service is improving.

"By pairing 311 data with annual citizen surveys, we can do a much better job at targeting resources," said Lawson. "The data lets us know what residents want and where they want it."

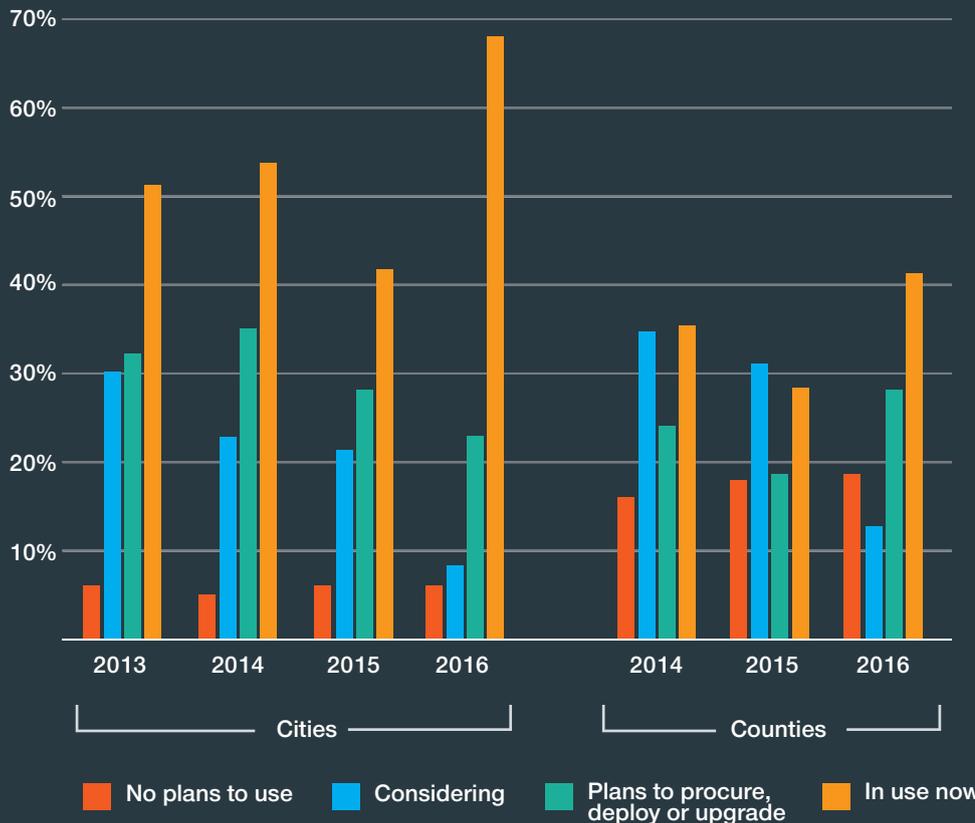
The city also pays close attention to what citizens think of 311 service overall. In 2010, 49 percent of survey respondents said they were satisfied with the service; last year 61 percent of respondents said it was doing a good job. In all, the city tracks more than 500 different types of data points that have to do with 311 and posts all the results in charts on its open data portal.

Lawson attributes the obsession with data to Troy Schulte, the city manager. "There used to be a lack of accountability, whether departments performed well [with 311] or not, and most of the time they did not perform or participate



Gaining Traction

Over the last few years, the use of CRM has been ramping up in local government. The Digital Cities Survey revealed that as of last year, more than 90 percent of cities are either using or working to deploy the technology. And while it's not quite as pervasive in counties, nearly 70 percent are doing the same, according to the 2016 Digital Counties Survey. Since the information has been tracked for cities, more than half have implemented CRM, while the numbers have been inching up for counties. As cloud computing makes the technology more easily attainable and citizens look for their governments to take a customer-driven approach to services, these numbers are expected to continue to rise.



because there was no incentive for them,” she said. “But the current city manager is a leader when it comes to data-driven city government. He wanted the data, so he started meeting with departments and looked at their performance on the service requests. Since then, things have progressed as more departments rely on 311 data to measure performance and service satisfaction.”

Upgrading 311 Capabilities

Kansas City replaced its CRM in 2015, but has decided to upgrade again and plans to have a new system from Tyler Technologies in place by the end of the year. It follows a pattern among other cities that have launched 311, only to end up modernizing the back-end technology as features continue to evolve and customer expectations grow. Depending on the size and sophistication of the service, a 311 operation might have not just CRM, but also auto call distribution, interactive voice response, computer-telephony integration and some kind of knowledge-management capability.

One of the chief reasons why local governments are upgrading their existing 311 capabilities is the changing way constituents interact with government. Thanks to how commercial online services have broadened the channels for customer interaction, governments find themselves playing catch-up with the newest modes of engagement, according to Cornelius.

“People expect to have a number of different interaction channels available to them all the time. It’s multichannel, with people expecting to text, chat, interact on the Web, as well as make phone calls,” he said.

To provide that kind of capability means cities have to update and upgrade their software. Already, 311 has gone through one evolution from simply being a switchboard-type operation, providing information and taking down requests that were passed on, by paper or email, to specific departments. Now, most 311

Source: Center for Digital Government's Digital Cities and Counties Surveys

services are digitally capturing service requests and automatically routing them to the appropriate department, providing the caller with a tracking number, so that as the request moves forward and becomes a work order, they can check on its progress and eventually receive a notification when the job is done. As in Kansas City, constituents are then asked for feedback on how the service request was handled.

“The more progressive governments are pursuing multichannels, work order management, field service and analytics because it makes for more effective services overall,” said Cornelius.

By having multiple touch points, involving customers and workers, cities can collect an unprecedented amount of data on problems, services, expectations, engagement and their related costs, all in great detail. Using CRM, cities can begin to monitor, measure and analyze services at the enterprise or city level, or at the departmental level. For the first time, many city managers can know for certain whether they are hitting service-level targets.

“You can measure for internal performance as well as provide the public with feedback on what the city has done in terms of performance improvements,” said Cornelius. “If CRM is implemented and used in the right way across the enterprise, it has the ability to become a critical management tool in local government.”

Cloud 311 Popularity Grows

Sacramento, Calif., began 311 more than a decade ago, and like other cities has decided to move on to next-generation technology. Less than a year ago, it upgraded its legacy CRM to a cloud-based solution from Oracle.

“When we put out the RFP, there was only one vendor that offered an on-premise solution,” said Chris Hobson, the city’s 311 manager. “Market forces are pushing all of CRM into the cloud. All the big and small players are pretty much offering cloud-based solutions only.”



Sacramento,
Calif., 311
Manager Chris
Hobson

ETRAGON/EIDAM

In 2015, the global CRM market totaled \$26.3 billion, up 12.3 percent from the previous year, according to IT research firm Gartner. Much of that growth was attributed to the surging demand for cloud solutions. Not surprisingly, Salesforce, a cloud-based CRM software company, is the market leader, followed by SAP, Oracle, Microsoft, Adobe and others.

Perhaps the biggest potential beneficiaries of cloud CRM are smaller municipalities that, until recently, were unable to afford the infrastructure and development costs for an on-premise 311 operation. While cloud doesn’t provide a huge price break compared to traditional 311 solutions, it does give cities flexibility, including the ability to set up and launch 311 quickly, without the need for IT staff to maintain the servers and networks.

Where it gets affordable is when a city leverages the CRM as a shared service — running 311 for general constituent services while using the technology to support other specific help-center-type requirements, such as a utility billing and customer service department, for example. Still, having an out-of-the-box 311 solution, where customers can pick and choose what features they need, is an opportunity waiting to happen, according



to Cornelius. “This can benefit cities that previously might not have thought 311 was cost-beneficial for them,” he said.

Of course, cities of all sizes are moving into the cloud. Boston rebranded its 311 services in 2015 and is now in the process of upgrading its CRM to a cloud platform from Salesforce. “We’re going from a CRM that was built for airlines and hotels to a [cloud] platform with tools we can use to build and transform our bureaucracy,” said CIO Jascha Franklin-Hodge. “What’s important is that these are platforms, not products. We can provide for today’s service levels, but also build for new experiences and services based on the data we are collecting. Modern CRM platforms let us build the experiences that we envision our customers wanting.”

Still, cloud CRM has to answer the same kind of concerns that other cloud solutions trigger for government customers. “What gets in the way are concerns about security and whether the information is going to be stored in the cloud at some location that’s out of state or out of country,” Cornelius said.

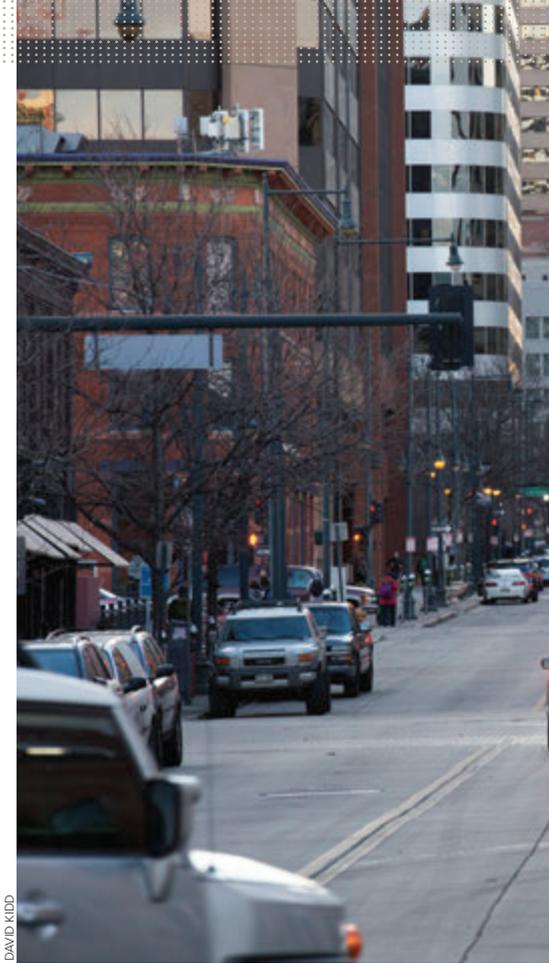
Demand for Service Grows Stronger

One thing is clear — whether 311 operates in the cloud or an on-premises platform, the number of calls and requests continues to rise. One trend

is that the addition of new channels, whether through a mobile app, chat or via social media, such as Facebook, has brought in an entirely new type of 311 customer: people who don’t care to use the phone, but are quite comfortable making a request online. Many of these new customers are millennials and other youthful demographics who may not know what a phonebook is or who have never seen a bank check, but know how to interact via an app. Other users of online channels are people who don’t speak English as their first language or may have a disability that makes phone calls difficult.

The new channels have not cut into the number of hotline calls cities receive, according to 311 managers. “There has been a steady increase in the people who continue to call us by phone,” said Hobson. In response, the city has put the most common questions it receives online in hopes of reducing the call volume. “Yet the calls continue to go up,” he said. And as the city adds new services and facilities (Sacramento recently opened a new downtown sports arena), it leads to more calls and queries to 311.

Moving more calls to online channels is important because the expense of having human call agents on staff to manage the queries and complaints is an issue for most cities. “The problem



DAVID KIDD

with 311 is that cities cannot sustain the call volume because of the cost,” said Steve Craig, director of constituent services for Somerville, Mass. “You need to be proactive about pushing the other channels as a means for engagement.”

For cities that operate 311 around the clock, the cost factor becomes critical. Sacramento, which has a population of approximately 480,000, is on the borderline in terms of city size for 24/7 311 services. “There’s very little activity after 10:00 p.m., until 6:30 a.m.,” Hobson said. Yet the city continues to maintain round-the-clock 311 service for a number of reasons.

Sacramento’s response has been to move as much of the information and requests as it can from phone calls to online knowledge-based articles or to chat, which can be handled differently. “Calls are the most expensive and least efficient means of customer service,” explained Hobson. “We want to reserve as much of the phone call time for those challenging and difficult questions. If the request is easy, you shouldn’t have to phone in that your garbage wasn’t picked up. That’s a straightforward

COLIN WOOD

Boston CIO Jascha
Franklin-Hodge





Denver Adds Social Listening to Its 311 System

Denver, a consolidated city-county, is making ongoing changes to how it interacts with more than 650,000 residents, resolves service issues and gets ahead of potential community problems.

In early April, more than a year after their 311 system went live, city and county officials announced an upgrade that

includes several components from Salesforce. The Social Studio, specifically, enables municipalities to track and aggregate online conversations via social media.

“We’re just on the cusp of that but we can already see that that’s going to be very popular,” said Christine Binnicker, Denver’s deputy CIO, adding that the service allows the city to be more proactive in responding to developing issues.

Salesforce, the San Francisco-based cloud computing company, is one of the major providers of CRM solutions to government. Its 311 Service Cloud Einstein platform gave Denver the functionality to offset the infrastructure demand placed on the region by the average 1,000 new residents per month.

The new platform, which went live at the end of 2015, lets residents get answers and make service requests through pocketgov, Denver’s mobile app. It also loops in Twitter and Facebook 311 pages, notifies staffers when residents reach out, and lets officials easily respond when service requests are complete. “Smart word routing” in the software uses key words to route requests directly to the appropriate divisions.

Denver retains ownership of all the data that’s generated — an issue state and local agencies nationwide are concerned about. Exact numbers weren’t available from Denver, but in a news release, Salesforce said its metrics show increases in online case volumes and call volumes of 68 percent and 10 percent, respectively. Meanwhile, the company said Denver’s average 311 call length has declined by 23 seconds.

Binnicker noted that new residents are partly responsible for the rise in case and call volumes. As a result, the city-county hasn’t been able to realize a savings by cutting staff at its 311 call center — but it hasn’t had to add employees either. That’s because pocketgov and other communication channels are reducing pressure on the call center.

Similarly, information on Denver’s return on investment from the new 311 system wasn’t available. But Binnicker said the city embarked upon the project to realize returns in soft dollars and improved customer service — not to boost its bottom line.

“We didn’t go into it trying to save the city money,” she said. “We went into it trying to make the customer service experience better for our citizens.” — Theo Douglas

request that can be done automatically through the Web or an app.”

But providing the public with easy-to-understand instructions — whether online or over the phone while talking with an operator — brings up another challenge in the world of customer engagement: It takes time and a lot of work to design the content that goes into the knowledge management system used by call center operators and, by extension, the apps that must capture what the customer wants, process the request, and convey it to the right agency or worker in the field.

“The problem is designing content so that a question can be quickly translated into useful information,” said Cornelius. “How do you create content that can be easily searched? How do you design content based not on what cities call things, but what a customer might call and ask about?”

Cornelius worked with New York City and former Mayor Michael Bloomberg on one of the earliest and most comprehensive CRM knowledge management databases ever designed. He said it was one of the most time-consuming parts of the project, pointing

out that the database needed to have just the right kind of search words associated with the right content — and it had to be kept current.

“This is important with 311, where you are trying to provide the right information or answer on the first call,” he said.

The other reason why content design is so important has to do with the fact that call center agents are not domain experts. Making it easy for them to take a customer’s question or request and find the right answer — or the right department to handle the request — is critical to providing good service.

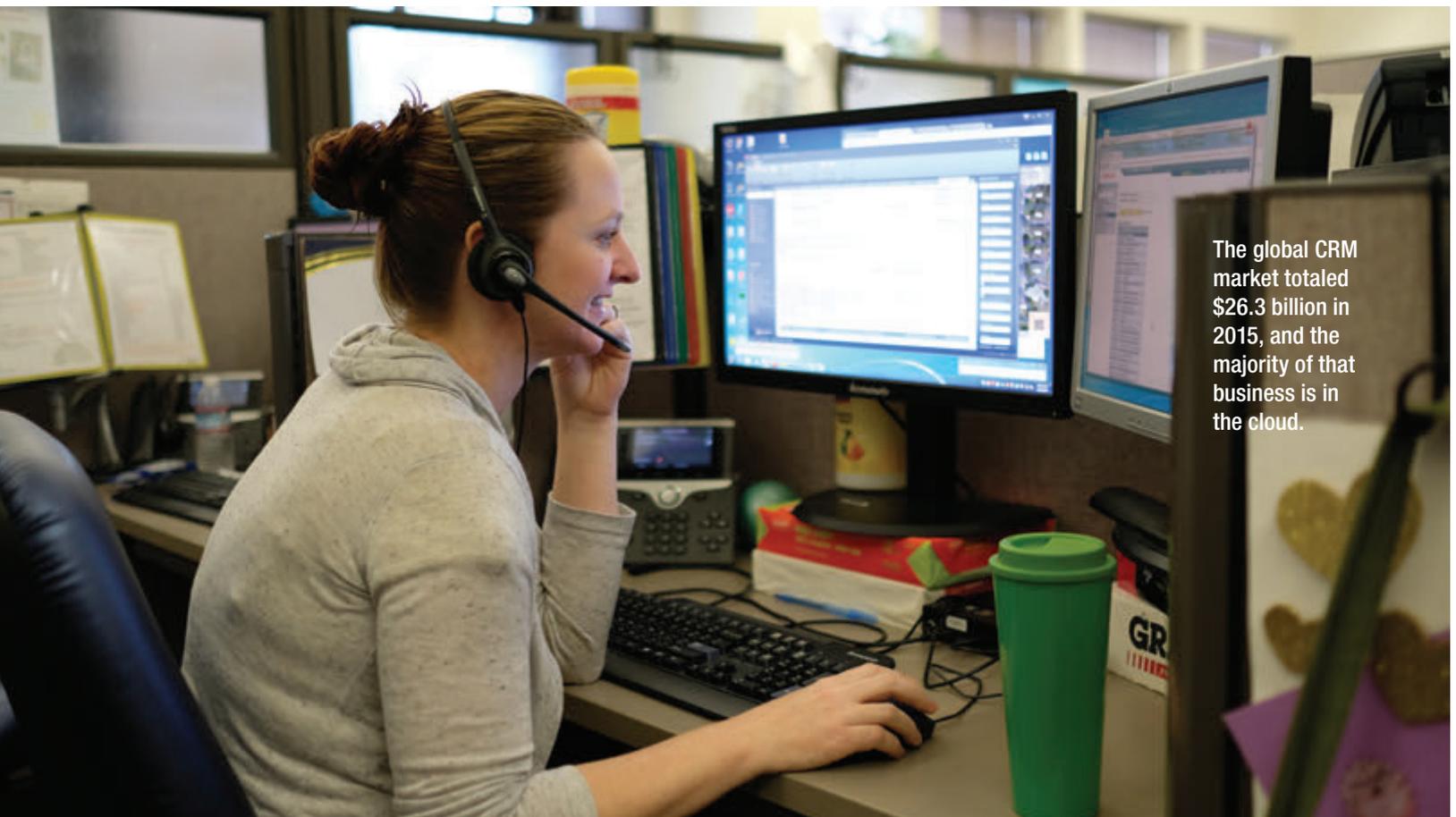
When a call center agent is talking with someone on the phone, he or she has the flexibility to ask additional questions to pinpoint the nature of the complaint or request. This isn’t the case when queries originate online, especially with social media, such as Twitter or Facebook.

“We have to triage those requests through the call center; they can’t just be automatically routed to a department,” said Lawson of Kansas City. A Web request or tweet actually takes longer to process because the staff person has to figure out how to classify the problem, code it correctly and get it to the right source. “A pothole isn’t always a pothole,” she explained. If, in fact, it’s a sinkhole, that involves a different department — water versus street repair — and a different kind of response.

One technological solution to the kind of ambiguity that can crop up through social media or Web requests is that the more advanced 311 systems include asset mapping. According to Lawson, Kansas City’s 311 will show if a utility or sewer line is beneath the location of a reported pothole, which helps take the guesswork out of some of the requests.

Asking the right questions, classifying the requests and then coding them properly so they get routed to the right department, brings up another issue that vexes every 311 system, namely well trained staff. Finding qualified workers to staff the 311 call centers, train them and then keep them isn’t easy. Many cities are just beginning to grow their staffs again after years of freezes. Those that can hire struggle to find the right people. Finding qualified staff members with the right computer skills and customer service skills can be a real challenge, according to Amber Wiens, manager of CS Week 311, a networking organization for 311 professionals. In particular, cities are looking for call agents who are bi- or multilingual to serve the non-English-speaking public, she said.

As Lawson and other 311 managers keep pointing out, cities need their best



The global CRM market totaled \$26.3 billion in 2015, and the majority of that business is in the cloud.



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Key CRM and 311 Tech Trends

- ✓ Moving to virtual servers/cloud technology to take advantage of advances in mobile, Web portals, texting and chat
- ✓ Increasing use of social media to provide quicker responses
- ✓ Expanding the number of self-service options
- ✓ Replacing legacy CRM
- ✓ Increasing the use of remote desktops
- ✓ Expanding community outreach efforts

Impact of 311 on Government Services and Performance

- ✓ Citizens expect an immediate response, which can be hard for some jurisdictions to meet
- ✓ Municipalities are expanding the number of remote agents in the event they have to work remotely during an emergency
- ✓ Increasing workloads in call centers has impacted attrition rates
- ✓ 311 is taking on the work of other departments, such as utility billing queries
- ✓ Cities are incentivizing worker performance, recognizing and rewarding top performers
- ✓ Cities are adopting workforce management tools, using agent metrics to evaluate performance

311 Workforce Challenges

- ✓ Quality assurance monitoring
- ✓ Training programs
- ✓ Finding qualified call agents with computer and customer service skills
- ✓ High demand for bilingual and multilingual call center agents

and brightest folks in there who can answer questions. “Our mantra is to be accurate, courteous and easy,” Craig said.

Pushing the Mobile Boundaries in Boston

If traditional, hotline 311 calls and fully staffed call centers are financially unsustainable, then the future of customer service and CRM might be found in the city where the first mobile app was launched. Since that eventful moment, Boston has seen its digital channels grow significantly, expanding 10 percent per year for the past three years, according to Franklin-Hodge. “Today, we are averaging 59 percent of our service requests through digital channels,” he said. “There’s been a dramatic move by our customers from phone to digital.”

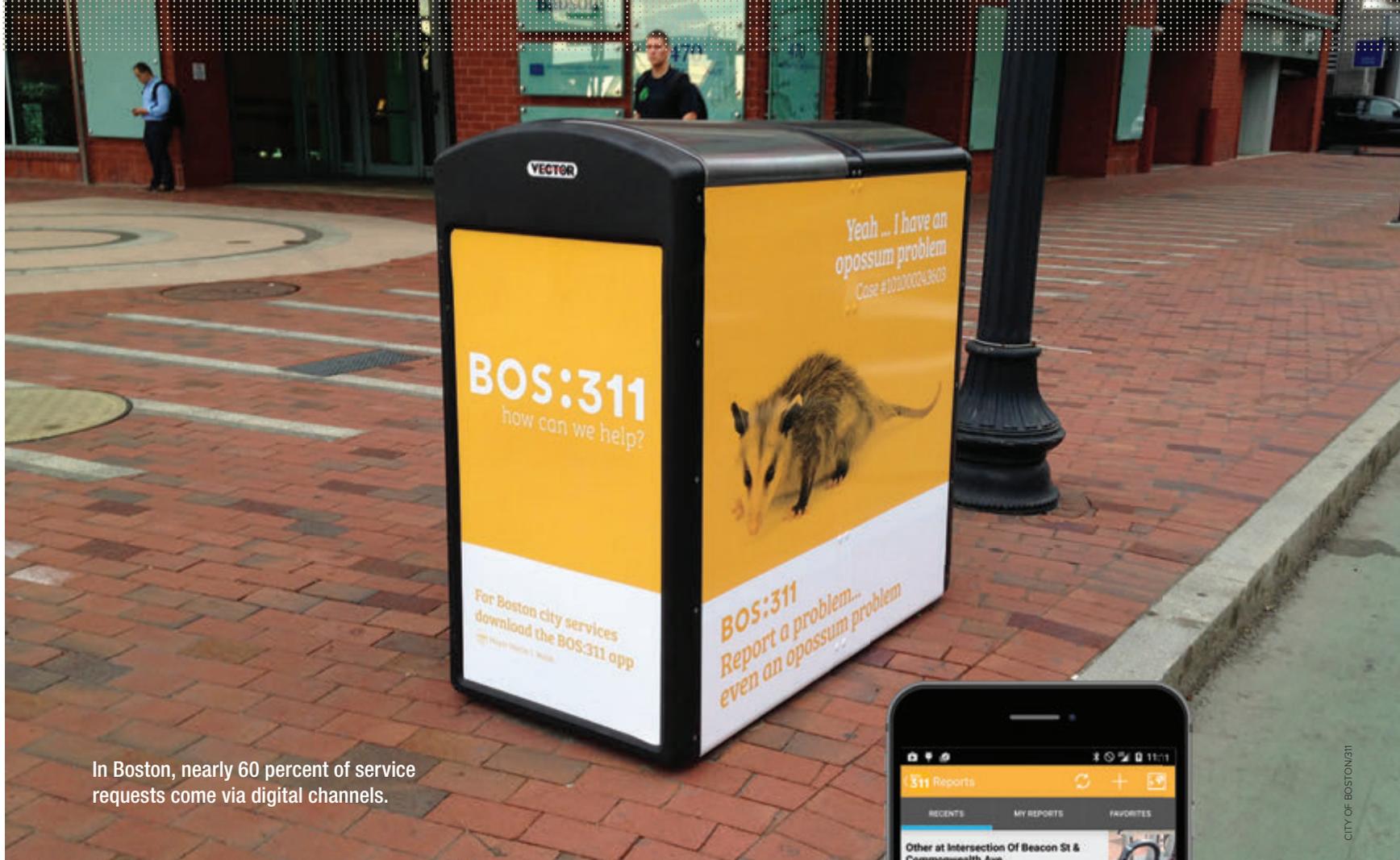
Like other cities, the rise in digital requests, queries and complaints in Boston hasn’t put a big dent in the number of phone calls; instead, the city finds that citizens are becoming more comfortable and more aware of the fact they can contact and engage with the city as never before, pushing up the overall growth in 311-related services. At the same time, however, better technology means better data, and that converts into better information for the city.

Every service request — by phone, mobile app or Boston’s Web portal — becomes a piece of data that can be used to track the city’s performance against a benchmark service-level agreement. “That data from the SLA becomes incredibly valuable information for managers to use,” said Franklin-Hodge.

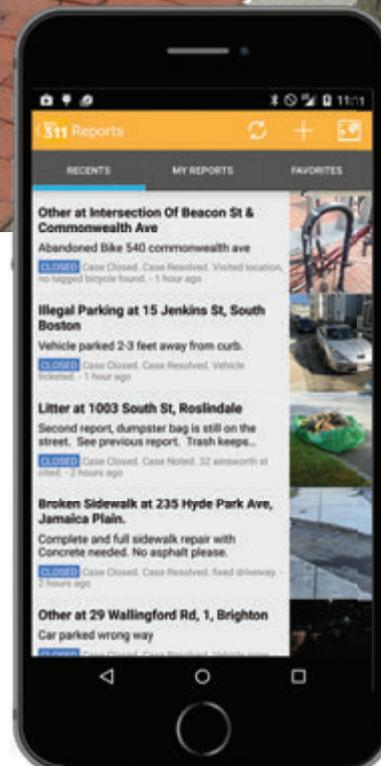
Managers can use the information to figure out what to pay attention to, as well as any anomalies that can affect performance results. Franklin-Hodge related one situation where a city department was capturing weekend work requests on paper and not reporting them into the system until the workweek began, delaying valuable information on what repair work they had completed.

Another way Boston uses 311 data is to figure out which neighborhoods are using the service and why. More importantly,

SOURCE: CS WEEK 311



In Boston, nearly 60 percent of service requests come via digital channels.



CITY OF BOSTON/311

why aren't some neighborhoods taking advantage of 311 services? "We're trying to find out whether people feel empowered across different city neighborhoods to get their needs met by contacting the city and why there are disparities when it comes to using the app or the hotline," said Franklin-Hodge. "It's possible some neighborhoods might not know the services are there for them to use, or they don't feel empowered to use them."

The Amazon Metaphor

As cities become more sophisticated with 311, inevitably they speak about Amazon, the giant online retailer, as a metaphor of what public customer service can become. For example, Amazon doesn't have a different website for each of its services; it's all found under one digital roof, making it easy to shop. "Constituents expect the same from government these days," said Franklin-Hodge. "That means breaking down the silos; building just

one app, which allows a user to have just one login and one shared experience."

While companies have figured out how to hide their silos from customers, government hasn't quite reached that frontier. As Kansas City discovered, as long as there is no incentive or accountability for agencies to participate in 311, silos, whether they are hard or soft, will remain. It takes leadership at the very top to drive such change.

When it comes to customer services, one problem that government doesn't face compared to the private sector is customer loyalty. If customers don't have a good online experience on Expedia for example, they can move over to the next competitor. Government, of course, has a captive audience. But there's a huge risk if government doesn't provide the kind of consumer-like experience that is expected today.

"Consumers can't change governments if they get frustrated," said Franklin-

Hodge. "But they will become cynical about government and lose trust, and will be less willing to support the next big public project or engage with us over an important issue. We have a profound obligation to define and set an experience of government services that is better than they have received in the past." 



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DAVID KIDD





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By Zack Quaintance / Staff Writer

A Match Made in Government



MICHELE MELCHER ILLUSTRATION



Plenty of entrepreneurs want to work with government, and a growing number of jurisdictions are finding a way to make it happen. But the process isn't without its hurdles.



There is a metaphorical chasm at the heart of civic tech. Standing on one side of the divide are municipal and state governments, anxious to enhance digital services, reduce costs, bolster efficiency, and, ultimately, serve the public better. On the other side, straining to see what's across, are tech startups that have often done in the private sector exactly what the governments want so badly to accomplish. Now, if only the two sides could meet.

Thoughts about what causes this disconnect are frequent and diverse — inadvertently confusing procurement processes, challenges of scale that make civic tech infeasible for all but giant companies, the lucrative allure of private-sector startup success — but those standing at the edge agree on one thing: There must be a way to cross.

The stakeholders are certain of this because there are, in fact, companies making the leap, and there are governments developing programs that function as a crude rope ladder, pulling startups over after they try to reach. These efforts increasingly fuel hopes that a mutually beneficial bridge can be built, one that enables private-sector expertise to join city and state governments permanently.

Entrepreneurs that have crossed this gap have been richly rewarded, both financially and spiritually, and the governments that have hauled them over have built better digital services that impact real people's lives. Yet the question

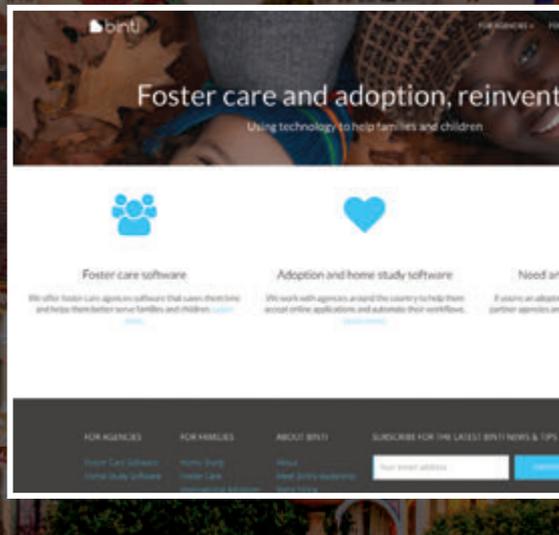
remains: How can they do a better job of working together to cross this divide?

Binti began life in 2014 as a startup making software to ease the organizational burdens of private adoption processes. For one of the company's co-founders, Felicia Curcuro, this was personal work — her sister had adopted two children a decade prior. By watching her sister's experience, Curcuro saw that navigating multi-year adoptions was stressful and complex, even for the most eager, willing parents. Statistics confirmed her anecdotal observation — 6 million children are orphaned worldwide annually, 3 million families express interest in adoption, and 1 million take steps toward doing it. Yet, only 250,000 families complete adoptions. Why? High costs, long processes. And as a result, children suffer.

Through Binti, Curcuro and Co-Founder Gabe Kopley worked to change this. They created a TurboTax-esque software that removed hassles for would-be parents, and their company was successful. Binti, however, wanted to do more.

Around this time, Curcuro began volunteering as a court-appointed special advocate, visiting the same foster child each week and serving as her voice during court hearings every six months or so. Like many burgeoning tech companies, Binti is based in San Francisco, where rising mean income and subsequent demographic shifts make it difficult for the county government

Binti worked closely with San Francisco's Human Services Agency to understand how social workers evaluate potential foster parents.



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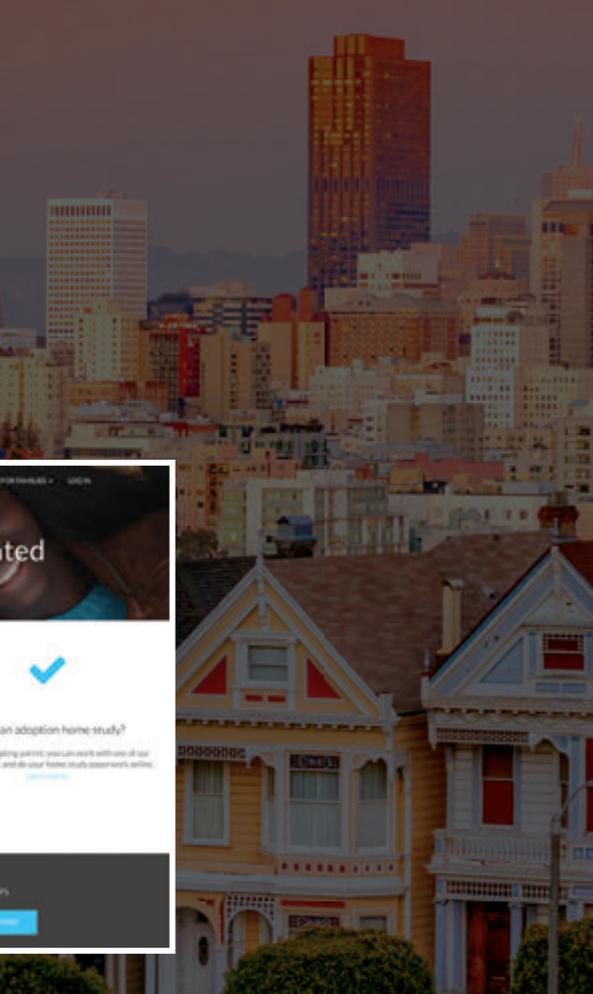
“I’d never worked with government, I’d never worked in government. How do you know who to reach out to? How do you begin that? From the outside, procurement is really challenging. It was like a black box.”

to find foster parents. Curcuro became aware that the foster system where she lived could be improved, and she thought the lessons her startup had learned facilitating private adoptions could help.

The question then was how does one turn good intentions and tech-sector experience into actual government work that benefits real people?

“We had interest in beginning to work in foster care,” she said, “but, to be honest, it was a little bit intimidating. I’d never worked with government, I’d never worked in government. How do you know who to reach out to? How do you begin that? From the outside, procurement is really challenging. It was like a black box.”

Curcuro and Binti needed a bridge across the civic tech chasm, and San Francisco built them one. In 2014, the same year Binti began its work in the private sector, the city launched a program called Startup in Residence (STiR). As chief innovation officer for the tech-heavy city and county of San Francisco, Jay Nath knew the benefits that cooperation between the public and private sectors could reap, and his awareness led to STiR.



“One of the insights that we had is we have a number of challenges and pain points that entrepreneurs have no visibility into,” said Nath. “For that reason, you often see companies working on things they experience. Buses being late, voting issues, etc., but not really the inner workings of governments. We went with an idea to share some of the needs we have that the technology marketplace really hasn’t addressed.”

The program embeds startups inside city or county departments for 16 weeks, where they work unpaid on a pilot basis alongside agency staff and develop solutions to problems government workers face each day. For Binti, this meant joining with San Francisco Human Services, where the company learned that social workers were evaluating prospective foster parents with a single Microsoft Excel spreadsheet that had as many as 70 columns of information per applicant and was nearly impossible to track. Unwieldy and inefficient, the cluttered spreadsheet process was error-prone, and it was causing social workers to spend too much of their time getting people through the process.

Binti built software to modernize this, software that officials estimate saves social workers 40 to 60 percent of the time they used to spend evaluating applicants. The benefits for Binti have been astounding as well. With its work for San Francisco as a reference, the company is now working with 21 of the 58 counties in California, and it’s also in discussions with other states.

STiR has grown its reach, too, evolving from a purely San Francisco-based program in 2014, to a regional initiative in 2016 and 2017 with embedded startups in Oakland, San Leandro and West Sacramento city governments.

Curcuru said the unpaid pilot structure of STiR gave her company invaluable flexibility. If Binti had been signed on a contract, staff members would have had to know in advance what they were going to build. The startup team, however, didn’t know what the foster-care system needed until it shadowed workers.

Of course, other city, county and state governments might have less of a geographical head-start in tech than San Francisco does when attempting to connect with the startup world. It’s this mix of flexibility and education that is found at the heart of the most promising efforts.

To maintain the flexibility that’s so crucial in fostering civic tech innovation, a prolonged and deep effort to create a welcoming culture is key. This thinking has enabled city governments in places like Chattanooga, Tenn., or Kansas City, Mo., to make progress bridging the public-private gap.

Chris Crosby is a veteran of the tech sector, and an architect of three software companies, including most recently Xaqt, which builds smart city data and analytics platforms. Basically, Xaqt comes into local governments, takes existing data sets and aligns them with smart city programs to bolster efficiency throughout municipal tech efforts. About a year ago, Crosby’s company began working with Kansas City.

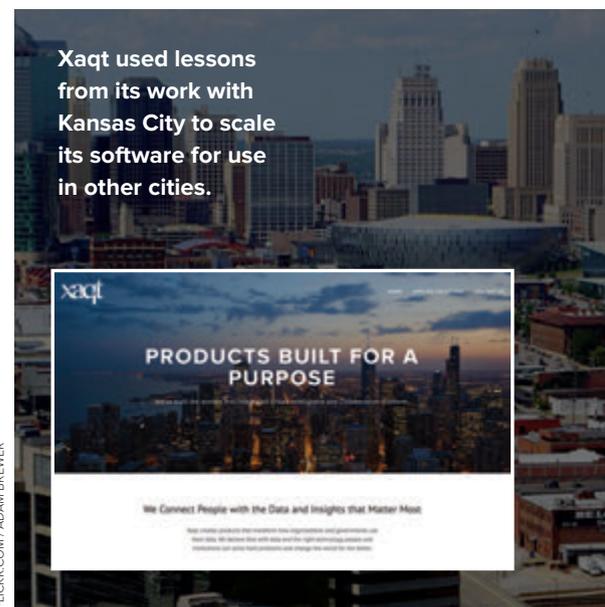
Crosby points to stakeholder buy-in as one of the most important factors in determining whether tech startups will be successful building tools for city govern-

ment, and that, he said, starts with culture. Kansas City had an existing office of innovation when Crosby and Xaqt began working there, which made it easy to bring the company into city hall a few days a week.

“We’re sort of merging the mindset and brain share around what the reality of city hall looks like every day to people who have to worry about filling potholes or are the lights turned on, those types of things,” said Crosby. “So we’ve been able to customize our platform and tools in such a way that addresses acute pain points for the city.”

When building software, the company has ensured throughout the process that city workers will actually use it once it’s complete. The lessons Xaqt learned from Kansas City have subsequently enabled the company to scale out its software to work with St. Louis. Xaqt is also close to contracts with four other municipal governments. Crosby said that Kansas City — which in addition to a culture of innovation also has procurement processes in place that allow things like pilots with startups — “has really become a pilot and a proving ground” for Xaqt and the civic tech solutions it has to offer.

One way that Kansas City accomplished this was through an Innovation Partnership Program that’s now in its third year — it’s an initiative that has a number of similarities with San Francisco’s STiR.



FLICKR.COM / ADAM BREWER

Kansas City's program reaches out to the startup community and challenges it to come to the city with proposals. There's a 30-day application process, seven to 12 companies are selected and then they do a pilot at no cost to the city for 90 days. Afterward, the agency that a participant has worked with can either secure a contract, demo its pilot elsewhere, or continue to refine it. Of the eight participants in last year's program, two secured contracts with Kansas City.

Bob Bennett, chief innovation officer of Kansas City, said that in addition to installing a culture that's friendly to startups, another key is making the RFP process easier for companies to navigate. Like many in government seeking to broaden the quantity and quality of the vendors they work with, Bennett admitted that the process can be frustrating. Often, RFPs for tech projects only attract

to facilitate cooperation among two private entities to solve a public-sector issue is also important for governments looking to leverage talent from startups.

"When you put together a gumbo that includes all of these firms with the city, you come up with something where the citizens win, and that's our purpose for existence as a city government," Bennett said.

During winter in New York City, apartment dwellers often must rely on landlords to set the heat for buildings. There are, of course, regulations that require property owners to maintain temperature minimums, but when the rules are broken, finding tangible proof is difficult, if not impossible.

A nonprofit startup, Heat Seek, however, has set out to fix this, creating temperature sensors to monitor and report findings

collaboration, and it's unique for a few reasons: It's older than other startup collaboration efforts with a history of seven years, it evolved from an incentivized campaign to enhance open data, and its aspirations have long been to diversify New York's economy. For Big Apps, improving government efficiency and the lives of New Yorkers has become a more prominent goal as the program evolved.

Perhaps the most relevant characteristic of Big Apps, as it applies to the gap between governments and startups, is that the program seeks to increasingly narrow the problems it sets before participating technologists and startups, said Kate Daly, senior vice president of initiatives at the NYCEDC.

"Narrowing the focus has been very successful because it allows people to come together in a much more targeted way," said Daly.



Heat Seek's temperature regulating tech may soon be required in New York City apartment buildings.

responses from the same handful of mega-companies, which use similar consulting processes that rarely surprise with ideas.

There have been efforts to simplify RFPs for the uninitiated, to be sure. In fact, STiR has made its application process an RFP, a move that San Francisco's CIO Nath said may have inadvertently led to a world record, when the program attracted 17 RFPs in parallel. However, Bennett said that even if the obstacle of the RFP is mitigated, challenges remain.

Kansas City, for example, has 95,000 street lights, and no idea-generating startup can handle that sort of scale. Learning

and violations. The startup is currently working with groups such as the Legal Aid Society to install its creation throughout New York, and the City Council is considering a bill that would require Heat Seek's tech to be installed by any landlord who has more than three buildings. Noelle Francois, executive director of Heat Seek, said its success was made possible by its participation in Big Apps, a civic innovation competition created by a New York City Economic Development Corp. (NYCEDC) initiative.

Big Apps is a large, comprehensive program filled with workshops, mentorship pairings and opportunities for

The decision to narrow the focus is the result of many years of running Big Apps and learning from past years.

In short, bridging the gap between startups and governments is a process that requires a commitment to overcoming institutional challenges and working through necessary adjustments along the way. It's not an easy road. But as these jurisdictions demonstrate, there is hope for those interested in bringing new ideas and tech innovations into government, provided the culture is amenable. [bit](#)

zquaintance@govtech.com

311 to Go

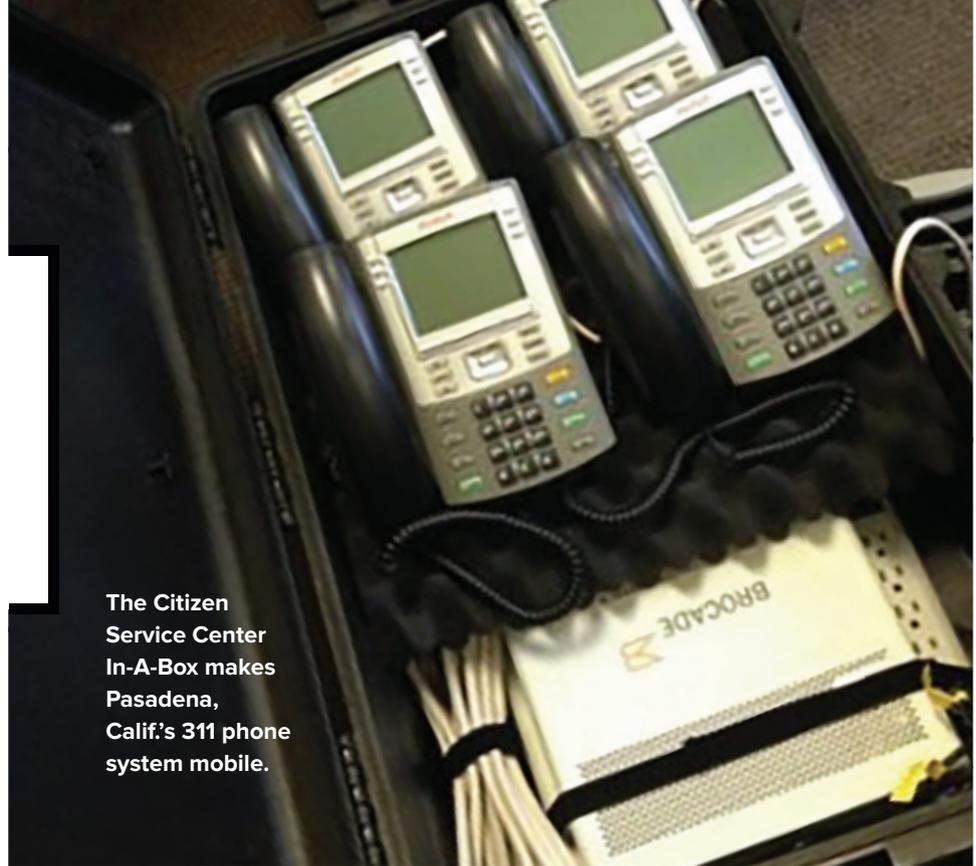
A grab-and-go mobile communications set-up ensures that one California city can be there for its residents in an emergency.

By **Julia McCandless**
/ Contributing Writer

What do you get when a major windstorm hits a 100-plus-year-old city? A recipe for disaster. That's what Pasadena, Calif., city officials faced in 2011 when severe gusts of wind toppled hundreds of trees and snapped traffic signals in half. The city launched its Emergency Operations Center according to procedure and began receiving 311 calls from residents who needed help. While operations went smoothly, it brought up an important question for city officials: what happens if we can't access our emergency facilities in the event of an emergency? That question led to the development of Pasadena's Citizen Service Center (CSC) In-A-Box to ensure emergencies don't get in the way of residents' ability to reach out to the city for help.

The idea is simple: If the city's call center facility ever becomes compromised, all the equipment and technology needed to communicate with residents is available and ready to be used in one convenient box. Rolled out last year, the box includes headsets, laptops and networking equipment that are programmed to connect to the city's network. To access the system in an emergency, users simply open the box, plug the equipment into a city network jack, and they can immediately access the 311-phone system to communicate with residents and emergency crews.

The box was an internal collaboration between the citizen service center and IT departments. The city's telecommunications specialists took on the technical challenge of recovering calls from anywhere in the



The Citizen Service Center In-A-Box makes Pasadena, Calif.'s 311 phone system mobile.

PASADENA, CALIF.

city. According to Phillip Leclair, Pasadena's CIO, the box is not only an efficient solution to a major challenge, it's also cost-effective. "The CSC In-A-Box is about disaster recovery, resiliency and business continuity. We're leveraging investments that already exist," he said. "It's really an extension of what we've already created, it's just the actual equipment that the end user will be using. The back end is the existing infrastructure that supports the whole city."

In other words, besides the headsets, equipment and manpower to set them up, the solution relies entirely on existing technologies, like the network phone system. Leclair noted that the box's minor costs are funded through general city funds earmarked for emergency operations preparedness.

While Pasadena hasn't had to use the box in an actual emergency, officials have conducted thorough testing to ensure it is configured properly and functions as planned. As the city's 311 manager, Mandy Templeton oversees the call center and the five team members who handle communications. Her small team receives about 75,000 calls and processes more than 25,000 service requests per year for things like water and power issues as well as emergency assistance. As a training measure, she leads monthly

timed drills to ensure all of her employees are prepared and confident to launch the box during an emergency, without the assistance of technical specialists.

Templeton pointed out that the box can also be used to scale up call center operations. "If we needed additional bodies to answer the phones, we are limited in our space," she said. "Just opening the box, I can increase my staff quickly if needed." She also noted that in the event that it is unsafe for her team to be in the call center, they can now simply load the box into a car and drive offsite to a safe location.

With such a high degree of simplicity, convenience and cost efficiency, could this solution work for other cities? Potentially. "The fact that this is mobile is wonderful and it's low cost," Templeton said. "In our city and every other city right now, cutting costs is No. 1, so this was using the resources we have here and the people in IT who have knowledge of how this could come together."

Leclair also pointed to the fact that it gives the city added redundancy and resiliency — things that rank high on the priority lists of government decision-makers. "It leveraged all of our existing infrastructure," he said. 

julia@aftonink.com

A DECADE IN THE CLOUD



Arguably one of the most transformative technologies to hit government since the Internet, how should IT strategies evolve to best capitalize on the cloud's potential today? **BY THEO DOUGLAS**

Public cloud growth may crest worldwide this year as modern cloud computing enters its second decade, but state, county and local agencies are likely to continue their migrations from private to public cloud.

The reason is simple: From Arkansas to Arizona, consolidation, transformation and lean initiatives are in. Having weathered the Great Recession, state and local governments increasingly seek the most cost-effective ways to deliver enhanced services to their customers — residents who expect more from public agencies after positive digital experiences in the private sector. Moving to cloud makes sense on several basic levels and within five years it may become the norm.

That's the forecast from Gartner. In its report *Predicts 2017: Cloud Computing Enters Its Second Decade*, published in December, the IT research firm said organizations are increasingly moving beyond just experimenting with cloud to seeking strategic relationships with providers, based on the breadth of their vision and delivery.

Overall, the global public cloud market “is entering a period of stabilization,” with growth expected to peak at 18 percent this year and taper off in following years, said Gartner Research Director Sid Nag in a statement on Feb. 22. Still, efforts to optimize costs and effect transformation hold “strong promise and results” for IT outsourcing buyers, he said.

Gartner predicts that through 2020, cloud adoption strategies will influence more than half of IT outsourcing deals.

For public agencies, cost is one of the biggest reasons for the move to public cloud. Privately built and maintained clouds can be expensive and deliver minimal returns, said Lauren Nelson, a principal analyst at Forrester Research. The CIA had the spending power to commission its own Amazon-built custom cloud, but state and local agencies typically haven't had that throwing power, she noted.

“The last seven years, building private clouds has been a really hard journey for local companies, and local and state governments are particularly challenged by that,” Nelson said. “The challenge is how do you feasibly do that.”

Security is another key factor. As public cloud providers like Amazon Web Services, Microsoft Azure and Salesforce increasingly meet federal Criminal Justice Information Services (CJIS) and Federal Risk and Authorization Management Program standards, and boost their own internal safeguards, state and local agencies are getting on board.

Shawn McCarthy, research director for IDC Government Insights, said control and security are more important than cost to government agencies. “Cost is a driver for cloud but it's no longer the main driver,” he said. “Just as important is the ability to improve security, to improve



Seattle doesn't plan to go all in on the cloud, said CTO Michael Mattmiller, at least not in the next decade.

access control, the ability to streamline your configuration management.”

Gartner cited “growing evidence” that the security of business data in the cloud for most mainstream enterprises is equal to or greater than what mainstream IT can provide on-premises.

Government agencies are also realizing that public cloud providers that do one thing — build and sell cloud — can do it better than government agencies whose focus is sometimes spread thin among many lines of business. That's why a migration to public cloud makes sense for agencies, said Neville Cannon, public sector research director at Gartner.

From March 1, 2012, to March 1, 2017, state and local agencies issued more than 16,000 cloud-related purchase orders, for a total spend of nearly \$463 million, according to SmartProcure.

At the federal level, IDC Government Insights reported that total cloud spending

CLOUD PLAYERS: WHO'S WHO?

A quick Internet search will reveal who the biggest cloud providers in the marketplace are. One could even find out which companies sell the most to the federal government. When it comes to the foundation of cloud computing — infrastructure as a service (IaaS) — a Gartner report from August 2016 puts Amazon Web Services and Microsoft far ahead of the rest

of the pack. Other big, established tech providers like Google, IBM and Oracle are jockeying for IaaS market share as well.

But the big players in the state and local government market is a very different beast. This is a piece of the cloud pie that hasn't received much attention — yet.

Using purchase order data from SmartProcure (2012-2017) and state

term request for proposal data from the Center for Digital Government (contracts active from 2015-2017), we hunted down cloud vendors serving thousands of agencies across the country. We focused solely on state and local government entities, excluding education, and homed in on IaaS and platform as a service. Because many purchase

orders and RFPs include multiple services, it wasn't possible to wholly exclude software-as-a-service purchases from the results. Additionally, the data isn't comprehensive — it merely provides indicators of market leaders.

Perhaps the most significant takeaway is that government tends to go to third-party vendors for cloud services, rather than approaching cloud

companies like Amazon, Microsoft or Oracle directly. Those companies did have contracts with government entities, but not nearly on the scale of IT companies that offered to manage their services for government customers.

In other words, if one were to pick a cloud purchasing agreement at a state or local government entity at



DAVID KIDD

have moved to public cloud are seeing benefits. Instead of being tasked with running all that infrastructure, their IT staff is freed up to focus on developing solutions to the core problem of government: effectively delivering services to citizens.

That can be a game-changer for IT departments eager to focus on data-driven operations. In its report, *Predicts 2016: Cloud Computing to Drive Digital Business*, Gartner said that no-cloud policies would be nearing extinction in 2020, “about as rare as a ‘no-Internet’ policy is now,” noting that many mainstream software vendors already consider cloud their first option for new apps.

“It will be largely unthinkable to eschew cloud deployments as a matter of policy,” the report reads. The question for government agencies is what their cloud strategies will look like.

For federal-level agencies, McCarthy said 2017 is already bringing a lull in cloud growth. A key reason is a common complaint heard from local governments too: legacy systems.

“While the system may be cheaper to host in the cloud, the cost of getting there may be expensive,” he said, noting that eventually agencies will have to take the leap as the silver tsunami washes out more and more workers capable of running COBOL and other venerable programs and architecture.

In fact, legacy systems are responsible for dragging down agency savings attributable to the cloud — averaging around 16

percent — down toward zero, said Cannon. Eventually, a tipping point will arrive. “Organizations that are putting this off because it’s too different now, that situation is never going to get easier,” he said.

As budgets continue to be trimmed, it can leave agencies stuck with legacy systems but unable to adapt or evolve, said Dave Rey, Salesforce’s executive vice president for the public sector.

“If they don’t look at changing this paradigm, [look] at moving this off-prem to a cloud, they’re going to have a very difficult time effecting innovation. It absolutely eats up a lot of free dollars,” said Rey, who estimated that legacy systems can consume 70 to 80 percent of IT budgets.

Asked by Gartner where they’d spend new or discretionary funding in 2016, 31 percent of government agencies said in “cloud services or solutions,” which ranked first out of 11 options.

But Cannon warned against thinking governments’ move to cloud would be accomplished with startling swiftness, adding that it’s “much, much slower than people believe or might hope.”

Nelson cautioned agencies to do their due diligence and realize cloud is not one size fits all. “I think you’ll see almost every organization will be using cloud to a certain extent, but the extent and the scope of that will vary for a very long time,” she said.

Several use cases show where agencies of varying sizes are headed in cloud.

In Seattle, Chief Technology Officer Michael Mattmiller said the city has

is projected to rise from \$2.2 billion this year to nearly \$3.3 billion in 2021.

The state and local numbers didn’t differentiate by model, but on the federal side, IDC showed that the infrastructure-as-a-service (IaaS) model is expected to lead the pack, with spending anticipated to rise from \$1.4 billion this year to nearly \$2.2 billion in 2021.

Gartner agreed in February, predicting IaaS would demonstrate the highest growth this year in the \$246.8 billion public cloud services market worldwide. IaaS is forecast to grow nearly 37 percent this year to \$34.6 billion. Platform as a service (PaaS), another of the three models most commonly associated with government agencies, is predicted to grow more than 23 percent this year to nearly \$8.9 billion. And software as a service (SaaS) is expected to be the biggest money generator of the three, growing more than 20 percent this year to about \$46.3 billion.

Public agencies may not do away entirely with their own data centers, but those that

random, they would be much more likely to find a company like CDW implementing a solution based in Microsoft Azure than they would be to find a contract between that government and Microsoft.

By cross-referencing the lists, we found four companies that appeared in the top 10 for both contracts won and the total dollar value of those

contracts. They were: Carahsoft Technology Corp., CDW, Dell and SHI.

Breaking it down strictly to the dollar value of POs, and excluding companies in the previous list, other big players include Identity Automation, Northwest Regional Data Center, Oracle, Ernst and Young, SAS Institute and SoftwareONE.

When looking at the quantity of POs, the list

grows to include Safer Network Solutions, Amazon, Barracuda Networks, Visa and AT&T.

Another insight to come from the research was that cloud service POs have been growing steadily during the past five years — not exponentially, not intermittently, but reliably. With some seasonal variation, the number of purchase orders from state and local

government for cloud services has risen from about 150 per month in 2012 to nearly 600 in the first months of 2017. Surveys of government officials from the Center for Digital Government lend more evidence that states are moving toward the cloud.

It’s also worth noting that a cooperative cloud purchasing contract set up through National Associa-

tion of State Procurement Officials ValuePoint has set up an avenue for many cloud vendors to start selling to state governments in particular. The cloud contract, which includes IaaS, PaaS and SaaS, has some names on this list like SHI and Carahsoft, as well as other big names familiar in government like Deloitte, Cisco and Esri. — BEN MILLER

maintained applications including its Microsoft Office 365 email system in the cloud for several years and works with other cloud vendors including Amazon Web Services. But he questioned whether cloud will soon become an all-or-nothing proposition for government.

In 2012, a time Mattmiller said likely pre-dated at-scale cloud deployment for the city, officials were faced with an on-premises data center nearing the end of its life. After an investigation, they decided remaining on-premises was more cost-effective in terms of hardware, staffing and operational expenses.

Over four years of planning, officials stood up a new co-located, three-tiered data center that houses mission-critical systems like the police and fire computer-aided dispatch and records management software, enterprise resource planning and utility billing systems.

“We opportunistically leverage cloud where it makes sense. Broadly, in the city, we see ourselves having a data center that we maintain and control for at least the next five to 10 years,” Mattmiller said, noting that there’s simply not a path to cloud for all of the roughly 1,200 applications the city maintains.

Of the three cloud delivery models, Mattmiller said SaaS seems to offer the most opportunity because of the speed at which solutions and access can be deployed. SaaS costs, he said, are more predictable than IaaS or PaaS — the latter of which also presents questions about portability should the city need to change vendors.

Having moved Seattle’s email system to the cloud, Mattmiller suggested that telecommunication services might be the next candidate for cloud migration.

In New Mexico, Albuquerque too has a hybrid approach to the cloud and continues to host many enterprise applications and data stores internally.

“We have found the cloud to be especially beneficial for services that are citizen-facing and/or require technology that would be unique for us,” said Associate CIO Brian Osterloh.

The city’s website is based in an open source content management system hosted in the cloud and uses unique database and middleware technology.

“The cloud lets us source the needed expertise while allowing city resources to focus on the strategic value of the Web; i.e., the content,” Osterloh said.

In San Diego, CIO Jonathan Behnke said the city has taken a hybrid public-private approach to cloud — but stood up its own private cloud about four years ago, where it maintains nearly 400 applications. The city has kept an eye on Microsoft Azure and Salesforce solutions, but finds some public solutions are still cost-prohibitive.

“We do see some things that are a better fit for our private cloud but then we still see a profound effect from the cloud on how we do business,” Behnke said.

Key issues for the city in public cloud are retaining data ownership and keeping downtime to an absolute minimum. Ten

“COST IS A DRIVER FOR CLOUD BUT IT’S NO LONGER THE MAIN DRIVER.”

percent discounts from public cloud providers whose servers crash are fine, Behnke said, but “the 10 percent won’t bring back critical services to residents.”

“Overall, our private cloud competes very well with the public cloud model,” he said. “The agility is there, but it’s too costly to go all-in.”

Behnke sees future processes like municipal permitting primarily ending up in cloud models, and on-premises models becoming orphaned. And he agreed that the SaaS cloud model is often preferred for its automatic updates and economies of scale — but said PaaS can offer real value in the right circumstances.

In June 2016, San Diego debuted its Get It Done app that lets citizens submit mobile service requests. On the back end, it’s run

by enterprise resource planning software from SAP. But the entire front end runs on Salesforce’s PaaS platform. More than 10,000 residents are using the app less than a year after its arrival, and staffers are able to quickly push results, including photos of completed services, out to residents.

In Vermont, Gov. Phil Scott signed on Jan. 15, Executive Order 06-17, which reorganized state IT under the new Agency of Digital Services and should also enable the state to leverage its tech buying power.

John Quinn, Vermont’s new CIO, said he’s been asked by the governor to inventory state software, scrutinize contracts and determine which apps could be moved to the cloud quickest. Currently the state operates in a hybrid environment, one that Quinn sees continuing for the “next few years” — but is planning long-term to migrate everything to its private cloud, which will better prepare legacy systems and applications for an eventual move to the public cloud.

The state is in the testing phase on moving some servers and apps to Microsoft Azure. Vermont already uses cloud-based Microsoft Office 365, Quinn said, and is working on enabling multifactor authentication so it can use Microsoft OneDrive and SharePoint as well.

“We are very focused on a cloud-first strategy. Whenever it makes sense financially, it’s our position to move to the cloud first as long as it meets our security requirements,” Quinn said, noting that Vermont looks closely at public cloud solutions to ensure they are CJIS-compliant and meet HIPAA and FTI standards for preserving health and tax information, respectively.

Quinn said his personal preference is for the SaaS model — asking rhetorically, “Who better to support Microsoft servers than Microsoft themselves?” — but that depending upon the situation, the state might consider IaaS and PaaS models too.

“I think there are efficiencies to be gained by moving to a SaaS solution and to a cloud-based environment to free up resources, whether it be infrastructure people or server people, to work on other priorities,” he said. 

MAPPING GAS LEAKS ▶

A collaboration between environmentalists, scientists and Google is working to locate methane leaks and gauge their severity. Colorado State University researchers outfitted Google Street View cars with laser-based sensors that essentially turn the vehicles into methane gas sniffers. Funded by the Environmental Defense Fund, the cars have hit the streets of Boston, Chicago and Los Angeles, mapping gas leaks as they traverse the cities. And last year, the cars mapped hundreds of miles of pipeline in New Jersey, helping the state's largest utility devise a data-driven replacement plan that officials say will reduce overall methane emissions by 83 percent. SOURCE: SEEKER.COM



1,250 gallons

When 500 2.5-gallon containers of mayonnaise were compromised by freezing temperatures, staff at Michigan State University added the sandwich staple to the school's anaerobic digester, which provides power to on-campus buildings. The condiment proved to be a good addition to the system, which thrives on foods high in sugars and fats.

SOURCE: TREEHUGGER.COM



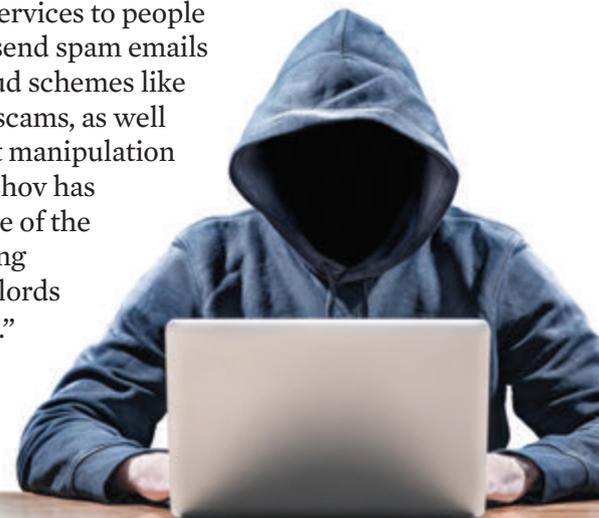
Beyond the Buzz

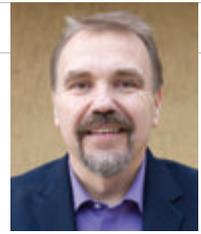
The annoying buzz of a mosquito's wings can reveal much more than alerting you that one happens to be flying nearby. Each of the 3,500 species of the insect has a distinctive pitch to its hum — and it's possible for the insects to be classified from a cellphone recording of that noise. Traditionally traps are set in areas that are the most prone to mosquito-borne diseases and then they're identified under a microscope. A low-cost, easy-to-use method for surveillance through a mobile-phone based system could lead to a global tracking solution that identifies the location of a malaria-carrying mosquito versus a Zika-carrying one. Called a "Shazam for mosquitoes" by *The Atlantic*, the tool could be invaluable in the fight against these life-threatening diseases. SOURCE: THEATLANTIC.COM

\$500

The price a Russian hacker charged to send 1 million scam and phishing attack emails through the Kelihos network, which at times included more than 100,000 infected computers. U.S. authorities took down the botnet after hacker Peter Levashov was arrested April 14 in Spain. The network was made up of private computers operating on Windows that were infected with malware, giving Levashov the ability to control them remotely. He sold the network's services to people who used it to send spam emails advertising fraud schemes like work-at-home scams, as well as stock market manipulation schemes. Levashov has been called "one of the longest operating criminal spam-lords on the Internet."

SOURCE: PHYS.ORG





Following Washington's Lead

(No, not that Washington.)

The unified government in Washington, D.C., is a rich source of coverage and running commentary by journalists, policy analysts, cable pundits and late-night TV comedians. Search for the phrase “What Trump means for ...” and Google returns an even 132 million results, including clues and speculation about the potential impacts on state and local government. If past patterns persist, there will be a temptation in some quarters to mimic the work of the new White House Office of American Innovation — whatever that becomes.

Alternatively, we could do something else and look left to the geographically and alphabetically challenged state of Washington. Same namesake, strikingly different politics, and with a tendency to push forward in its DNA.

This “other Washington” has been my home for 25 years. It is a place where interesting things happen in the public and private sector, sometimes playing against each other. This is an idea-rich environment — ideas that can be helpful in thinking through the complex issues at the intersections of public disclosure and transparency on one hand, and automation, immigration and the world of work on the other.

Legislatively, the 2017 session saw changes to the public disclosure law in exempting inventory and security information about the state's IT infrastructure,

helping local governments improve the management of electronic records, and introducing new fees for electronic copies of public records. In addition to that trifecta, the Legislature also ordered a feasibility study for the creation of a statewide open records portal.

Some study. Some pilot. Some do.

Put former Microsoft CEO Steve Ballmer in the latter category. He bankrolled the creation of USAFacts, a portal to visualize government revenue and spending, showing where money comes from and where it goes. Designed by Seattle-based Artefact, the civic data tool is elegant and simple, providing a comprehensive summary of financial performance of government programs in a way that is friendly to mobile users and familiar to users of Form 10-K that's required for financial reporting by corporations.

Ballmer's former boss, Microsoft co-founder Bill Gates, thinks that if corporations are improving their financial performance by automating work once done by humans, then they should pay a robot tax. Gates recently told *Quartz* that taxing companies' use of robots could do a number of useful things: slow the near-term spread of automation and subsidize jobs that are uniquely well suited for people to do like caregiving and working with kids in schools. Gates, a longtime optimist about technology's role in society, says government cannot rely on business to produce positive social outcomes by itself and will need to take an active role in

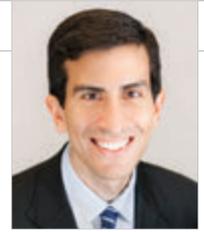
ensuring the protected jobs will be directed to workers who need them the most.

Immigration plays an important role in a complex labor market, and brings with it challenges of its own. Seattle is also home to a new immigration tech startup called Boundless. Co-founded by a former Obama tech policy adviser and an ex-Amazon executive, Boundless is a digital tool for navigating what its founders call the “opaque, intimidating and high-stakes” immigration process. With \$3.5 million in early funding, Boundless is taking on the tangly issues related to family unity under federal immigration laws by helping U.S. citizens and resident aliens apply for visas for their foreign-born spouses.

Finally on the work front, an early experiment in holacracy at the Washington state government technology agency is now the subject of a formal Harvard study, complete with a control group to measure the impact of peer-to-peer self-management on getting things done. The formal results are expected later this year and could help make public service attractive to workers who would otherwise not consider it.

There is an old bit of legislative language in Washington state about imagining the future and then building it. That is still going on here in large measure. And it warrants the occasional look to the West Coast even if your mental map defaults to the east. [@t](#)

Paul Taylor is the chief content officer of e.Republic, Government Technology's parent company.



Fighting the Opioid Epidemic

Privacy concerns are hampering the effectiveness of prescription drug monitoring programs.

Prescription drug abuse is a significant problem in America. One way states are attempting to address this problem is through prescription drug monitoring programs — government-run databases designed to track how doctors and pharmacists in a state prescribe and dispense controlled substances. The goal of these programs is to help identify who is prescribing and being prescribed controlled substances, and to take steps to combat abuse and misuse. Unfortunately, some state lawmakers have either dragged their feet on implementing these programs or have created policies that limit their effectiveness under the guise of protecting privacy.

Prescription drug monitoring programs have a long history. California launched the first continuously running program in 1939 when it began requiring doctors to send carbon copies of handwritten prescriptions to the state's Department of Justice. In the intervening years, states began to do this electronically, and almost all states adopted some variation of this program, with the vast majority doing this after 2002 when Congress began providing grants to help pay for them.

And by most accounts they have largely been successful. For example, a year

after implementing its program, New York had a 75 percent drop in patients going to multiple doctors for the same drug.

These programs have become especially vital with rising

concerns about opioid addiction — every day 44 people die in the U.S. as a result of overdosing on prescription painkillers. But here too prescription drug monitoring programs have been effective. Florida, for example, reported a 50 percent drop in oxycodone deaths two years after establishing its prescription drug monitoring program. And the Centers for Disease Control and Prevention call prescription drug monitoring programs “among the most promising state-level interventions” to combat the abuse of prescription opioids.

Yet for all their successes, progress has been an uphill struggle. Consider recent events in Missouri. In April, the Missouri Senate approved legislation to create its own prescription drug monitoring program, putting it on track to becoming the final state in the country to implement such a program. This was a long overdue reform, but they have run into constant roadblocks from those who view any effort at using data-driven interventions as too privacy intrusive. For example, in the recently passed Missouri bill, one legislator limited the amount of time the government could keep records to 180 days. While many states limit how long the government can keep the data, such a short retention period is counterproductive. This means that doctors would have no information about treating a patient who has relapsed after as little as six months.

Other states have imposed restrictions that limit the effectiveness of their databases. For example, some states do not require providers to report data

immediately. Alaska only requires pharmacies to report data monthly, and a handful of states, such as Texas, Georgia and Florida, only require weekly reporting. Other states limit how data can be shared, such as by not allowing interstate data sharing, or permitting it in their statutes, but then not implementing data-sharing agreements with other states. The result is that a patient can get a prescription in one state and drive across the border to get it filled without anyone being the wiser.

Finally, while many states produce de-identified data for research purposes, some states only allow government employees to do this analysis. So after investing millions into building these databases and producing anonymized data, these states are limiting public health researchers at top universities from using this de-identified data to study prescription drug addiction. These arbitrary limits on using de-identified data simply make no sense.

Prescription drug monitoring programs are not a silver bullet, but they create much of the data that health-care workers, law enforcement officials and public health experts will need to address this problem. As the opioid epidemic continues to escalate, hopefully state policymakers will stop resisting efforts to use data in the fight against addiction and pay more attention to questions about whether prescription drug monitoring programs have everything they need to be maximally effective. [bit](#)

Daniel Castro is the vice president of the Information Technology and Innovation Foundation (ITIF) and director of the Center for Data Innovation. Before joining ITIF, he worked at the Government Accountability Office where he audited IT security and management controls.

Read full reports and breaking news about career changes across tech-driven roles in government at govtech.com/people.

18F's Hartley Heads to Canada

Hillary Hartley, one of the guiding technologists who shaped the federal government's startup-inspired digital innovation team 18F, was named



Ontario, Canada's first chief digital officer, the province announced March 27. Hartley said earlier in the month that she was ending her term with 18F nearly a month ahead of schedule.

CHICAGO'S CIO JOINS UI LABS

Brenna Berman may have left her role as CIO of Chicago at the end of March, but that doesn't mean she's finished helping the city with technology modernization. Berman joined UI Labs, a consortium of industry, academic, community organizations and governments working to expedite public-private partnerships that can tackle large problems. She was named executive director of City Digital, the organization's urban innovation program. Chicago CTO **Danielle DuMerer** is serving as acting CIO.

Vermont Launches Digital Services Agency

On April 17, IT in Vermont shifted when a new Agency of Digital Services took the place of the Department of Information and Innovation. This move is part of Gov. Phil Scott's strategy to manage Vermont's IT infrastructure more effectively. And on April 25, Scott announced the appointment of **John Quinn** as the state's CIO and secretary of Digital Services. He served as chief innovation officer in the previous state IT department since January. Quinn replaces Darwin Thompson, CIO and commissioner of the Department of Information and Innovation.

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NORTH CAROLINA HIRES A NEW CIO

On April 7, Gov. Roy Cooper named **Eric Boyette** the state CIO. Boyette will take over the position from Danny Lineberry, who served as acting secretary and CIO since Keith Werner departed in January. Boyette was CIO for the state's Department of Transportation and acting commissioner for the Division of Motor Vehicles. His move to the Department of Information Technology comes on the heels of a massive effort to consolidate IT systems and tackle issues like rate reform and modernizing the procurement process.



NYC Brings on San Francisco's STiR Director **Jeremy Goldberg**,

director of innovation partnerships and the Startup in Residence program in San Francisco, left in April to become the managing director of NYCx, an initiative based in the New York City Mayor's Office of Technology and Innovation. With Goldberg's involvement, STiR grew from a citywide initiative in 2014 to an annual program in four regional cities.

Mancini Returns to the Public Sector

Prince William County, Va., announced on April 11 that IT veteran **Robert Mancini** will return from the private sector to lead its Department of Information Technology. The Board of County Supervisors for the state's third largest county made the announcement after a competitive hiring process and a nationwide search. Mancini has 30 years of experience in IT and 12 years in local government — he was the CTO of Washington, D.C., before leaving for Lexington Technology, a pharmaceutical firm.



DAVID KIDD

IBM Veteran to Lead N.Y. IT

Less than a month after the departure of Maggie Miller, New York found its new CIO in 36-year IBM leader **Robert Samson**. The announcement was made April 25 as part of a series of appointments by Gov. Andrew Cuomo. Samson is taking over the state's IT operations after retiring from IBM in 2009. He occupied several leadership positions at the company, including stints as general manager of its Global Public Sector business and as vice president of its Worldwide Systems and Technology Group.

Arkansas Taps Yessica Jones as CIO

After nearly five months leading Arkansas' Department of Information Services (DIS) as its interim director, **Yessica Jones** was formally appointed to the position March 17. Prior to joining DIS in January 2016, Jones was an assistant professor with Harding University's Department of Management Information Systems. She also served as Gov. Asa Hutchinson's outreach liaison to the Hispanic community. *Read about Jones' current efforts in Arkansas on [page 14](#).*

ALASKA HIRES CIO TO LEAD CONSOLIDATION

Gov. Bill Walker signed an administrative order April 25 consolidating Alaska's IT and telecommunications assets to a standalone agency under the leadership of a state CIO. Previously the functions had been under the purview of the state's Department of Administration, which delegated technology responsibilities to executive branch agencies. Walker tapped **Bill Vajda**, a technologist with ties to the Bush and Obama administrations and a wide breadth of experience in government and industry, as the state's CIO.

Rhode Island Picks First Cybersecurity Officer

Rhode Island hired former utility executive **Mike Steinmetz** to be its first cybersecurity officer, the state announced April 18. Steinmetz will serve as Gov. Gina Raimondo's principal policy adviser on cybersecurity, and will develop and implement a comprehensive state cybersecurity strategy. He is also serving as Rhode Island's homeland security adviser.



Rhode Island's first chief innovation officer, **Richard Culatta**, left the state to lead the International Society for Technology in Education starting in May. Culatta, who was named a *Government Technology* Top 25 Doer, Dreamer and Driver in 2016, said both the name of his replacement and how the next iteration of the Innovation Office will look remain a mystery for the time being.

Maryland Names Acting IT Secretary

On March 8, Maryland named **Michael Leahy** its acting secretary of information technology. He replaced David Garcia, who served as state CIO and secretary of IT and stepped down in January. Previously working as an adviser to Gov. Larry Hogan, Leahy provided guidance on "practical governance and policy matters," per LinkedIn. And as director of real property strategies, he developed and implemented asset management tools and methods for the state.

San Diego CISO Departs for Private Sector

After nearly four years with San Diego, CISO **Gary Hayslip** left to pursue an opportunity in the private sector. Hayslip started his tenure with the city in May 2013, and he worked across more than 40 departments to bolster cybersecurity defenses. He joined Broomfield, Colo.-based cybersecurity firm Webroot as its CISO in April.

FORMER INTEL EXEC TO LEAD COLORADO'S BROADBAND EFFORTS

Gov. John Hickenlooper tapped **Tony Neal-Graves**, a former vice president of Intel Corp., to lead the state's broadband expansion and enhancement efforts. Neal-Graves, who started work March 15, serves as executive director of Colorado's broadband office, and his experience is expected to be an asset as he uses public-private partnerships to drive the state's broadband strategy and expand high-speed access. "It's going to take a state government working with municipalities and also with private companies, ISPs and various service providers to really solve the problems in the different counties," he said. "I think my business background — in terms of developing those types of partnerships — will lend itself to this as well."



Moving Beyond Email

It's not always obvious how an internal department can benefit from social media.



Social content is very visual these days. While your traditional HR newsletter probably wouldn't perform well on social media (it's too lengthy and text-heavy), postcards tend to work. Grab a screenshot of one of your postcards that features a large image and minimal text, add a relevant hashtag, link to a splash page for more information, and you've got the recipe for highly shareable content.

Video also has tremendous reach on social media, and it's only going to grow. Add a little social recruitment into the mix by shooting a quick smartphone video showing a behind-the-scenes look at what it's like to work for your agency. Talk to personable staff members about their jobs, make it quick and lighthearted, and be sure to have good audio. You can repurpose the video clip on Facebook, Periscope and YouTube, and point viewers to your job opening page.

With a little creativity, the social media possibilities for human resources are endless. Given this, how could other internal-facing departments (think information technology, auditors, etc.) benefit from social media? [It](#)

I hear this all the time: "If I'm the human resources rep for my agency, wouldn't I just send everyone an email to let them know about programs and deadlines? Why would I use an external social media site?" These questions are understandable, as it is not always obvious how an internal department such as human resources can benefit from embracing social media. Let me try to make you a believer.

Not Everyone Has Email

This isn't something that most staff members think about, but every worker at your agency likely doesn't have an official department email account. Many times, roles such as beat officers, street workers, and part-time or seasonal parks and recreation staff do not have assigned emails. How do you communicate about wellness fairs, open enrollment and benefits to employees who don't have agency emails? You might post the information in break areas, or include flyers with paychecks and other offline methods. Using social media profiles to help communicate this information just might come in handy.

Awareness vs. Reinforcement

Let's talk for a minute about using social media for awareness versus reinforcement, because it's an important concept that will align your use of social

media with offline efforts. Awareness refers to showing someone information for the very first time. Reinforcement, on the other hand, means they previously heard about your information and they are seeing it again for repetition. Your primary goal as a traditionally internal-facing department is to use social media for reinforcement. Employees may not take action on open enrollment the first time they notice it on a flyer in their paycheck. But after seeing gentle reminders on social media a couple of times, they may be more likely to finally enroll.

Reaching Retirees

Government benefits administrators need to communicate with retirees on issues such as retirement, pensions, senior wellness, etc. The question is: Would your social media efforts even reach them? More seniors are using social media than you might think. According to 2016 Pew Research data, 34 percent of Americans age 65 and over are on social media. The most popular platform for them is Facebook (36 percent), but the second most popular is LinkedIn (11 percent), followed by Pinterest (9 percent). The point is that your retirees certainly don't have an official agency email address any longer, but there's a chance of reaching them on social media.

What to Share and How

Another great reason for the human resources team to use social media is that you already have great content.

Kristy is known as "GovGirl" in the government technology industry. A former city government web manager with a passion for social media, technology and the lighter side of government life, Kristy is the CEO of Government Social Media.

IF YOUR CITY USES THESE



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