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25 GOVERNMENT INNOVATIONS YOU SHOULD KNOW

2018

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Executive Summary

A mobile security application in New York City. A lean idea-sharing platform in Colorado. An automated workforce solution at the Bureau of the Fiscal Service. A Data Asset Catalog Service in North Carolina. A new website for the Small Business Administration.

Examples of innovation can be found throughout government at the local, state and federal levels. Frontline personnel are finding new ways to do their jobs better and smarter, while agency and IT leaders are finding ways to enhance services and engage citizens.

But given the scope of government and the volume of work completed every day to achieve mission goals, it can be easy to miss these pockets of innovation. That's why we celebrate the top innovations of government every year in this guide. This year, we're highlighting 25 innovative agencies and departments that created new strategies and used new technologies to drive change in five categories:

- **Cybersecurity**
- **Digital services**
- **Workforce**
- **IT modernization**
- **Process management**

Read this guide to learn about the top 25 local, state and federal innovations of 2018.

Across the many innovations we saw in 2018, some emerging and critical technologies were prevalent. Look for these icons beside our case studies to learn what supporting technologies made these innovations possible.

Cloud computing Data analytics Artificial intelligence Automation

What's Happening in Government

It's clear by the numbers: Cybersecurity, digital services, workforce development, IT modernization and process management are areas with big challenges but even bigger opportunities for the public sector.

Sources: Analytics.usa.gov, Brookings, Capterra, Deloitte, Federal Times, Federal News Network, FedTech, Forbes, ITdashboard.gov, Statista, White House "Federal Cybersecurity Risk Determination Report and Action Plan", White House Report "The Cost of Malicious Cyber Activity to the U.S. Economy", White House Report "Strengthening the Federal Workforce"

Cybersecurity

$14.98 billion
Proposed fiscal 2019 federal cybersecurity budget

$57 billion – $107 billion
Estimated cost of malicious cyber activity in the United States in a single year

21,239
The number of cybersecurity incidents the public sector suffered in a single year

74%
of federal agencies have at-risk or high-risk cybersecurity programs

Digital Services

2.72 billion
Number of visits to government websites in one 90-day period

Of those, **47%** were done on mobile devices or tablets

More than **70%** of the U.S. workforce will be mobile by 2020

78%
of government officials said digital capabilities allow their employees to work better with citizens

80%
of public-sector respondents said digital business is important for organizational success

Workforce

45%
of federal workers are older than 50

6%
are younger than 30

Over 1 year
the length of time it can take to fill a single federal job vacancy

job posted — applications recieved — interviews — ???????

$50,000,000
Amount proposed for the fiscal 2019 federal budget to finance innovative approaches to recruitment, retention and reskilling

IT Modernization

$81 billion
Amount spent governmentwide on IT in fiscal 2018

$83.4 billion
Amount government is projected to spend on IT in fiscal 2019

70.9%
Amount of the government IT budget that went to operations and management of legacy systems in 2017

$100 million
Amount Congress authorized for fiscal 2018 to modernize existing IT systems and undertake new initiatives

Process Management

2017
80%
of major federal IT projects described themselves as agile or iterative in 2017...

2011
10%
... compared to less than 10 percent in 2011

Average duration of government software projects fell from **108 to 7.9 months** with the implementation of agile

$32 billion
Amount lost to failed IT government projects in 2017

1995 — 1997 — 1998 — 1999 — 2000

1996
the last time Congress was able to complete all its spending bills in the allotted fiscal year

Cybersecurity

California Secures the Internet of Things

California recently became America's first state with cybersecurity regulations for the Internet of Things (IoT). Gov. Jerry Brown signed two bills in September 2018 mandating basic security benchmarks for all IoT devices.

IoT is the network of physical gadgets that can connect, collect and exchange data. As the number of such web-connected devices has grown, so has the number of vulnerabilities cyberthreats can exploit. The technology's rapid evolution has left state governments scrambling to protect sensitive information without stifling innovation.

To address this challenge and the privacy and security concerns IoT presents, California State Assemblywoman Jacqui Irwin created **Assembly Bill 1906**, while California State Sen. Hannah-Beth Jackson crafted **Senate Bill 327**.

"We have this big proliferation of IoT devices and lots of innovation going on, but security is often the last thing these innovators look at," Irwin said. "We needed to change that paradigm."

The bills will take effect Jan. 1, 2020, with one guideline stipulating "a reasonable security feature or features" for all IoT devices and the data they collect, contain and transmit.

Manufacturers can also meet California's new rules by having unique, preprogrammed passwords on new IoT devices. Another method is requiring users to create a new means of authentication before allowing initial access. These features deter hackers and prevent accidental data mishandling.

"These basic security measures are going to prevent a lot of hacking [of] these devices because these players will move on to the ones that aren't secured," Irwin said.

Technology is a major industry in California because of Silicon Valley's presence there. Irwin said that this fact made cooperation between the public and private sectors essential for the state's first IoT regulations.

"Not bringing businesses to the table would be irresponsible," she said. "If we want to maintain California's lead in technology, we have to beware of overregulation. It's a balancing act."

Critics argued that the bills were too vague or did not implement enough privacy and security protections before they became law. Advocates countered that the legislation would better shield consumers while launching greater public dialogue about the issue.

California's status as a major force within the U.S. economy, meanwhile, raises the chance other state and local governments could imitate its regulations. In fact, the Golden State's reach is wide enough for the federal government to take notice.

"California's a huge marketplace and often our requirements will be put into products that are sold elsewhere," Irwin said. "If the federal government wants to put together regulations for these devices, more power to them."

"We have this big proliferation of IoT devices and lots of innovation going on, but security is often the last thing these innovators look at. We needed to change that paradigm."

Jacqui Irwin, California State Assemblywoman

GSA Tests Facial Recognition Software

In2018, the General Services Administration (GSA) in 2018 tested whether **facial recognition software** could be used to verify travel documents. The agency wants to leverage automated software to determine whether submitted documents are altered, counterfeit or genuine. They also want to compare for accuracy the images of a person on a document with images of a person holding that document.

To ensure that the acquired solution would meet these needs and enhance security, **GSA** "used a representative set of genuine, altered, and counterfeit documents to see if the software could correctly distinguish genuine documents from counterfeit or altered documents and identify why the documents were not genuine."

GSA's pilot results helped establish accuracy benchmarks and specific areas for future research of the technology.

NYC Launches Mobile Security App

Mobile devices are everywhere, and their prevalence makes them attractive targets for cyberthreats. Knowledge is half the battle, so informing citizens of the dangers facing them is crucial.

To this end, New York City launched a free mobile security app called **NYC Secure** in October 2018 that shields users' data without harming their privacy.

NYC Secure improves peoples' cyber hygiene by warning them about potential security risks. The app functions without an internet connection, and it issues alerts about hazards such as unsecure Wi-Fi networks and unsafe Android apps. Users have the final say on whether to act. The app lets them choose how they use their devices while providing information for more secure decisions.

Las Vegas Protects Cybersecurity With AI

Las Vegas' city government safeguards the cybersecurity of more than 640,000 residents daily. Artificial intelligence is helping ensure that officials there don't gamble with such a serious duty.

The city's existing cybersecurity capabilities recently **received an upgrade**. Antigena is an add-on component to Darktrace, a program that Las Vegas has used for cyber defense for two-and-a-half years. The program has since established a pattern of normal behavior that it uses to monitor the city's network.

Antigena removes people from the equation by leveraging automation to recognize network anomalies, such as unauthorized file sharing, and appropriately act against them. These tools support city employees, saving their energy and time for bigger menaces.

DHS Unveils National Risk Management Center

The Homeland Security Department established a new component in July 2018 that aims to mitigate threats to cybersecurity and other critical national functions.

The National Risk Management Center (NRMC) is a meeting point for the federal government and its private sector partners to tackle vulnerabilities. This includes cybersecurity threats such as malicious foreign powers, thrill-seeking hackers and cybercriminal cabals.

NRMC is now developing strategies to manage risks to America's critical functions. Besides cybersecurity, NRMC will monitor election systems and infrastructure control centers such as electric grids. The endgame is a shared framework for how the federal government and industry collectively manage risks to these systems.

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Industry Spotlight

Leveraging Fluid IT Management Solutions That Build on Each Other

An interview with Paul Parker, Chief Technologist for Federal and National Government, SolarWinds

Every day, new technologies hit the market. While they can be breakthroughs for opportunistic individuals, tech innovations often don't break into the public sector until years later. Agencies have more considerations — highly sensitive data and incessant interest from malicious actors — than their private-sector counterparts, and for government, security comes before risk-taking.

"Agencies worry that they can't secure the cloud the same way they secure a traditional infrastructure," said Paul Parker, Chief Technologist for Federal and National Government at SolarWinds, a leading provider of IT management and monitoring solutions. "That they can't secure fast-paced applications the way they secure desktop or server-based applications. And a lot of times, policy, security accreditation and training are lagging sorely behind the technology curve."

Of course, government has to prioritize security, but a safety-first approach doesn't have to stall modernization goals. With strong IT controls, agencies can stare down even the most glaring threats while taking advantage of innovative technologies.

Having strong IT controls can ensure that only authorized devices are permitted on the network, that user provisioning and access rights management policies are in place, and that you're able to easily track and identify assets on your network. "All of these things have to work together," Parker said. "It's like having instruments in an orchestra – you want them to come together to produce beautiful music, versus one guy just making a lot of noise."

With bring-your-own-device initiatives on the rise in the public sector, it's become increasingly difficult, if not impossible, for IT teams to manage all of the independent devices, processes and tools.

Rather than addressing modernization and security challenges through patchwork solutions, agencies should consolidate and integrate their IT monitoring and management tools to improve system visibility and reduce duplicate or underutilized tools, training costs and inefficient data collection.

"Visibility is the biggest part," Parker said. "You don't know what the size of the problem is until you get a better viewpoint on everything that's in the infrastructure."

SolarWinds, for example, provides a flexible set of IT operations management tools that can work together to provide secure network, system and application visibility that most agencies probably don't have today or that are covered by a number of different tools that don't operate well together. SolarWinds products and Orion® Platform can run alongside or replace many of those disparate tools to build a cohesive view. This can allow customers to see where problems exist and where the gaps actually occur, but does so in a cooperative and non-disruptive manner.

"Many times we know there's a problem with an application or server, and we reboot the server, but we can't identify and isolate the specific problem. We're taking it from guess work to evidence-based resolution and reporting," Parker said. To get started with IT consolidation and optimization, Parker highlighted five steps agencies can take.

First, agencies have to define the scope, meaning what problems they're hoping to solve, what organizations within the agency they want to include and the technical scope.

Second is performing an inventory, which is more than a mere count of what agencies have. This involves deducing where specific components are on the system and for what purpose they were added.

Third, agencies have to perform a needs analysis to determine what tools will drive the most efficiency based on the inventory's findings.

Next, agencies need to survey the market. Just like buying a car, agencies need to have a set of prioritized features and functions and assess vendors accordingly. Parker recommends that flexibility, security and automation be at the top of the list.

The fifth and final step is keep moving forward. After you've done all the work necessary in the previous four steps, don't just let everything fall by the wayside. It can be easy to feel overwhelmed after defining the scope and scale of the project, but by taking each problem and turning it into smaller projects, it can become more manageable.

Ultimately, agencies can improve their modernization initiatives and address concerns around security by consolidating their IT solutions with the help of ITOM tools and the five-step process. Not only can consolidation help with modernization efforts and security, but it can also improve efficiency and cost-savings.

Digital Services

GSA Office of Government-Wide Policy Implements Universal Design

Improvements in digital services and customer experience are leading the government to adapt to change. To see this in action, look at GSA's Office of Government-wide Policy (OGP), which is promoting universal design as a way to transform how the federal government approaches IT accessibility.

"Universal design is the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability," according to the Centre For Excellence in Universal Design. "An environment (or any building, product, or service in that environment) should be designed to meet the needs of all people who wish to use it."

So what does this mean in a government digital services environment?

"With nearly 1 in 8 people in the U.S. known to have a disability, there is a huge incentive for businesses, and the government, to invest in accessible technology to ensure that working environments are inclusive and available to all user groups," according to a **blog post on Section508.gov**. However, organizations often overlook key design areas related to accessibility when implementing new technologies, which leads to overspending in the long term to rectify early design decisions.

GSA hopes to change that process. "Paying specific attention to mobile friendliness, customer experience and innovation, the federal government is changing how we approach design, development and user experience," John Sullivan, Director of Government-wide IT Accessibility Program, wrote in a **blog post on GSA.gov**.

To provide the best service, Sullivan added, GSA needs to learn and understand who its users are, know their specific needs, and shape the experiences it wants them to have. Recently, Sullivan explained, GSA connected with the Customer Experience Center of Excellence (CoE) to learn more about their work with the U.S. Department of Agriculture (USDA) to improve customer experience.

"The CoE is conducting interviews and observations to map end-to-end customer journeys across the organization, and will use human-centered design methods to shape USDA's future strategy and IT implementation," he said. "The end goal is to take best practices learned at USDA and apply them at other agencies to improve customer experience across the federal government."

In short, when it comes to government digital services, pairing design and development teams from the outset of a project can ensure that accessibility is a core requirement and that the entire project results in a better, more accessible user experience.

> ***"Paying specific attention to mobile friendliness, customer experience and innovation, the federal government is changing how we approach design, development and user experience."***
>
> **John Sullivan, Director of Government-wide IT Accessibility Program, GSA**

SBA Redesigns Flagship Website

SBA.gov is a go-to resource for small-business owners, but until recently, information seekers could find little more than the website itself. "We were really bad at giving you actually what you were looking for once you got to us," **said** Ryan Hillard, a Digital Service Specialist at SBA.

The team executed a user-centered redesign using agile methodologies. SBA required vendors to deliver functionality every two weeks. The team also worked with subject-matter experts, contractors and users to ensure that information was accurate and accessible in a way that met users' needs.

The new SBA.gov is in plain language and is accessible, mobile-friendly and 508-compliant. A feedback mechanism for customers is built into the website. To track how website visitors interact with the content, what they click on and where they drop off, the team uses event-driven analytics.

West Virginia Cuts DMV Wait Times, Costs

Before December 2016, West Virginia residents had no alternative to going to their local DMV office and waiting in line to request services such as driver's license and registration renewals. "Depending on the demand and peak times, you could have anything from a 30-minute to a three-hour wait at a window," **said** John Dunlap, the state's Chief Technology Officer.

The state partnered with an e-government solutions provider to roll out digital services using a transaction-based, self-funded approach. Under this model, the vendor covers the cost of building and implementing the service and recoups those costs through nominal transaction fees that residents pay. In 2017, the state's interactive services processed more than 728,000 transactions totaling $146 million, Dunlap said.

Kansas Launches a County/State Digital Service Collaboration

Citizens under the unified government of Wyandotte County, Kansas and Kansas City, Kansas can now renew their state vehicle registration through a mobile app – possibly the first county/state digital service collaboration in the country, **according to officials**.

"By offering state services on our myWyco mobile app, we can make it easier for our residents to get government business done quickly and conveniently," Mayor/CEO David Alvey said. "Residents can now renew their vehicles in addition to paying property taxes and submitting 3-1-1 service requests through the myWyco app."

The unified government has closely monitored user feedback, incorporating regular updates that enhance the user experience. Since launching, myWyco has driven online payment transactions to increase 35 percent and online tax collections to increase more than 80 percent.

Grand Rapids Moves Online

If you access the website of Grand Rapids, Michigan, you might feel like you're entering a conversation. That effect is the result of a complete overhaul of the site completed in early 2018. In the new portal, the city provides more than 240 online municipal services that used to require in-person appearances, letters or phone calls.

Yet the government hasn't lost a personal touch. Website planners spoke with numerous citizen users and government employees about what they wanted from municipal services. Now, the most-needed services are on the homepage for easy access. More importantly, conversational language has replaced government jargon. For instance, the website asks, "Do you have a new property to manage? Congratulations! Let's get started on your new services" before offering a roadmap to complete the task.

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Industry Spotlight

How Artificial Intelligence Can Improve Customer Experiences

An interview with Bob Osborn, Chief Technology Officer, Federal, ServiceNow

Imagine you recently became married. You're excited about this new step in your life, but you know there's a bit of paperwork you need to do to really get started. Instead of guessing where you go to update your name, tax filing status and other paperwork, you log onto a central website and simply type, "I just got married. How do I change my information?"

An agent responds directly to your message in a chat box, letting you know they can help. Then the agent walks you through the workflow to process your changes. If you hit a roadblock, that agent connects you with an agency employee directly to address the specific challenge. But that employee isn't asking you redundant questions, because they already have a record of what you've done so far in the process.

This scenario might be a stark contrast to what you're used to experiencing when submitting a complicated request to a government agency. But in a recent interview, Chief Technology Officer Bob Osborn at ServiceNow explained that this interaction must become the new norm for government. He explained that rising citizen demands make it imperative that agencies pursue new solutions, including intelligent agents, to create seamless experiences for constituents.

"The challenge most agencies have today is that employees internally and the citizens that they serve are being conditioned to expect a level of service in their personal lives through commercial capabilities that they interact with," Osborn said. "These have really conditioned them to expect this level of automated service when they get to work, too."

To provide this level of service, many agencies are turning to platforms that consolidate constituent touchpoints and data. "It starts with a philosophical shift from focusing on individual application development that supports a specific function within a business unit like HR or logistics and focuses more on a broad platform approach of management, where you have easy-to-use applications that aggregate information from a multitude of systems of record," Osborn explained.

This consolidation allows service agents to leverage a wide range of information to support a single customer and avoids intaking redundant information each time a constituent submits a new request. However, modern platforms do more than consolidate data. They also leverage artificial intelligence to do more with collected data and better serve citizens.

"We see agencies moving into a platform that allows them to provide the same type of user experience as private websites and actually begin to introduce intelligent agents, to make suggestions and allow for decisions based upon someone's role and the permissions they have, in order to take action very quickly and easily," Osborn said.

Artificial intelligence can synthesize data from a wide breadth of citizen requests, inquiries and interactions to pinpoint common interest or problem areas. Then, artificial intelligence can craft automated workflows, as well as communication for citizens, to address those issues. Intelligent agents, also known as chatbots, can also walk users through those processes – improving the efficiency of constituent interactions while maintaining a personalized touch to those communications.

Service platforms that leverage artificial intelligence can transform the way constituents request and receive information from government agencies. But Osborn said some IT and customer service leaders are reticent to chart this advanced territory and adopt complex solutions.

The key is to take what Osborn called the "crawl, walk, run approach" that considers current agency solutions and processes before taking incremental steps toward automation and artificial intelligence.

"We offer a customer success journey," he said. "We sit down with representatives of an agency and we see where they are today, what technologies they have deployed, and then we map out how they get from where they are today to this very rich and immersive user experience."

By taking incremental steps to identify customer experience pain points – instances where support agents are dedicating significant resources or where constituents encounter redundant services – agencies can strategically invest in automation and artificial intelligence. They can ensure the service is improved, even as costs are cut and employees regain valuable time in their days.

"The expectation of our citizen users and employees today is so radically different from what they experience at work, and it doesn't have to be that way," concluded Osborn. With a common service platform that leverages artificial intelligence, government can meet the service demands of today.

Workforce

DoD Revamps Public Recruitment

The Defense Department (DoD) has completely revamped its approach to recruiting and applying its cyber workforce. To bring in tech talent, DoD recently created the Cyber Excepted Service (CES), which smooths the hiring process and allows U.S. Cyber Command hiring managers to hire on the spot, a practice not regularly available to federal government.

In May, DoD put CES to use by conducting its first public hiring event. Hiring managers received more than 300 resumes, conducted 70 interviews and made 18 job offers during the day. The results were more than DoD could have hoped for.

"[This was] an enormous success for the command and an important milestone," Air Force Col. Bill Norton, Cybercom's director of manpower and personnel, said in **a DoD news release**. "This is absolutely huge for the command, as the competition for cyber talent is hypercompetitive."

DoD continued the effort with three other hiring events in 2018. Making apparent the importance of efficiently bringing in top cyber talent.

"We must continue to recruit and retain a workforce that not only continues to serve our country, but understands that our work is like no other," DoD Chief Information Officer Dana Deasy **said**. "We cannot do this alone. The fundamentals of all this are the people."

But hiring new talent isn't the only way that DoD is bolstering its cyber workforce. Through initiatives such as Hack the Pentagon and Hack the Marine Corps, DoD has engaged a large group of tech talent from outside its walls. The success of these programs has amazed officials with the number of vulnerabilities discovered and attended to. This innovative practice has allowed DoD to see massive cybersecurity improvements through outside-the-box workforce tactics.

Code.mil is a similar effort that has been finding success for DoD by engaging the global developer community. In an official press release, DoD described objectives for the project: "[One] objective for Code.mil is to create a network of peers between the federal government and the developer community to encourage participation, share knowledge, and make connections in support of DoD programs that ultimately service out national security."

Each technique demonstrates the attention that DoD has placed on ensuring that its workforce is as efficient and effective as possible. With the recent push for workforce efficiency in the President's Management Agenda, DoD is doing its part to do more with less.

> ***"We must continue to recruit and retain a workforce that not only continues to serve our country, but understands that our work is like no other. We cannot do this alone. The fundamentals of all this are the people."***
>
> **Dana Deasy, Chief Information Officer, DoD**

Cary, North Carolina Partners for Recruiting

Cary, North Carolina has implemented new recruiting and retention strategies to make itself more appealing. This move comes as the city seeks new tech talent to continue a surge in IT modernization. Ground-up hiring starts their recruitment off on the right foot.

"We partner with [local community colleges and high schools] and bring in interns," Nicole Raimundo, the city's CIO said in **an interview with GovLoop**. "Cultivating that is really important to get people to understand that government is cool."

Once they've brought in tech talent, Cary keeps pace with private sector companies by physically changing the office to look like a tech startup. An open office and agile methodologies ensure that the Cary workforce stays strong and committed.

Rhode Island Implements Innovation League

Many government employees blame a lack of innovation on cautious and complacent workforce cultures. The state of Rhode Island has confronted this with a culture shift through the creation of the Government Innovation League.

By bringing leaders from each state agency together, the league fosters an environment of collaboration and innovation that allows for problems to be solved in new ways. Providing multiple perspectives and allowing for unique ideas don't always come easily in government, but the league has changed that.

"When you're tackling challenges and getting away from that fear of failure, that's where you learn and come up with new and different solutions," Maureen Dizon, Manager of the Personalized Learning Initiative at the Office of Innovation, said in **a video**. "It's an important culture to foster."

Emeryville, California Finds Budgeted Workforce Solution

Local governments are often pressed for resources, limiting their potential to help their constituents. Emeryville, California encountered this problem in the form of a lack of personnel, prompting officials to search for alternative solutions.

By partnering with Mills College, Emeryville was able to fill in workforce gaps in a way that has proven beneficial for both the city and the graduate students.

"Understand what your essential and non-essential deliverables are for your department," **said** Molly Curley O'Brien, Graduate Student at Mills College. "What could lighten the workload of staff in a way that is helpful and morale-boosting? What ideas have you had for a while that require research and implementation you don't have time for?"

Bureau of the Fiscal Service Automates Workforce

Amid a federal government push toward high-value work, the Bureau of the Fiscal Service (BFS) made a move to robotic process automation (RPA). It recently launched RPA pilot projects to try to save time and resources on essential but low-value work.

The results came quickly as RPA revealed that 80 percent of processes in the pilot could be fully automated. **In a release**, BFS said that this discovery will allow its employees to focus on tasks that add value to their jobs and are less routine. "We're working on a Fiscal Service-wide approach that will help us organize the deployment of bots and other types of automation tools," the release stated.

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Industry Spotlight

Launching Your Adaptive Network

An interview with Jim Westdorp, Chief Technologist, Ciena Government Solutions, and Steve Opferman, Senior Director of Innovation, CenturyLink

Federal agencies face daily pressure to handle the bandwidth demands on their IT networks. This burden is only becoming heavier with new devices and services being added all the time.

Unfortunately, today's agencies are using legacy networks that don't easily scale to meet these increased demands. Outdated government networks also pose a security risk because the addition of new devices means more ways for attackers to access agency networks.

According to experts at Ciena and CenturyLink – two vendors who are combining their expertise and technology to help agencies modernize their networks – an Adaptive Network is the solution to these challenges. In an interview with GovLoop, Jim Westdorp, Chief Technologist at Ciena, and Steve Opferman, Senior Director of Innovation at CenturyLink, explained the components of an Adaptive Network and how it can help agencies keep pace with rising bandwidth demands while balancing budgets and crucial mission needs.

"The Adaptive Network is the evolution from static infrastructure and services to dynamic ones," Westdorp said. Whereas current government networks are often described as inflexible and rigid, the Adaptive Network provides the flexibility to quickly and securely deliver solutions that meet rapidly changing agency priorities.

The Adaptive Network delivers this through three key capabilities: programmable infrastructure, analytics intelligence, and software control and automation. Programmable infrastructure provides a system that is accessible and configurable through common open interfaces. This lets agencies adjust their resources as needed to satisfy the demands of their network's applications in real-time.

Analytics and intelligence is the second element that agencies need amid increased bandwidth demands. Artificial intelligence and machine learning analyze network performance data to produce timely, actionable insights for organizations. These insights help agencies anticipate bandwidth demands, deploy resources more effectively, and predict potential problems.

"These tools give you the insight necessary to make changes and proactive repairs to the network before it fails," Westdorp said. "You also greatly reduce the possibility of multiple faults happening simultaneously or near-simultaneously and causing a customer outage."

Software control and automation is the third and final element of an Adaptive Network. These are essential abilities for automating and centralizing control over services across your network. More importantly, these capabilities function the same in any environment, regardless of how much of it is legacy systems and how much of it is cloud-based.

"The Adaptive Network is putting the functionality and sensors in place for instrumenting the network to determine its state and if there are any problems in it," Westdorp said. "Then there's automation and intelligence to analyze the data coming from the network. Finally, orchestration closes the loop and lets you make changes as a result."

The Adaptive Network additionally improves how agencies serve their constituents. Today's citizens are accustomed to easy, constantly accessible services from the private sector. Public sector organizations that fail to provide citizens with the same treatment risk losing their trust and the revenue their business generates.

"Many of these new technologies are designed to improve efficiency and performance and increase the utilization of the assets that we have," Opferman said. "But we must always be mindful of reliability. These technologies should render a more highly reliable, fully tolerant platform."

In addition to network reliability, cybersecurity is another major concern for agencies. The Adaptive Network doesn't sacrifice any fortifications for the flexibility it gives agencies; rather, it builds automation on top of the defenses that organizations already have. Automation helps them detect and mitigate cyberthreats anywhere in their networks in real-time.

"We're leveraging the network as it is today and adding enhancements on top of it," Opferman said. "It meets the agencies' needs in an expeditious fashion without compromising the resiliency that's built into their networks."

A tough but adaptable network can help agencies meet rising strains on their bandwidth and transform how they deliver services. The Adaptive Network meets organizations' modernization needs with agility and security. It's a model that saves them money by delivering high-performance connectivity and faster services to citizens.

"The Adaptive Network takes functions that historically have been comprised of multiple boxes and combines them into a single one," Westdorp said. "By doing a better job of keeping your network near optimum performance, you can reduce the probability of a citizen-impacting event."

IT Modernization

USDA Reaps Rewards of Centers of Excellence

USDA is used to dealing with pests and, like most other federal agencies, it has struggled to handle legacy technologies that leech about 80 percent of annual IT budgets. In 2018 however, USDA embraced several key initiatives — including the seminal CoE project — to retake its IT future and bury costly legacy systems.

"We are, essentially, in my view, changing the way people engage with us and changing the way USDA does business from a technology perspective," CIO Gary Washington **told GovLoop**. "I know our IT workforce is going to have to change because the goal is to get to a more digital, automated, self-service environment, which doesn't exist totally today."

GSA and the White House's Office of American Innovation announced that USDA would be the first agency to test the CoE concept based on "top-level commitment" from Agriculture Secretary Sonny Perdue. In March 2018, the first contracts brought together experts from USDA, GSA and the private sector to evaluate and revamp IT services in five focus areas: cloud adoption, contact center of the future, customer experience, service delivery analytics and IT infrastructure optimization.

USDA has completed the first phase of the project, a holistic evaluation of the five centers, saving millions of dollars in cost-avoidance.

"We are, essentially, in my view, changing the way people engage with us and changing the way USDA does business from a technology perspective."

Gary Washington, Chief Information Officer, USDA

Phase two envisions the transition path forward. Key goals include consolidating existing data centers into two main facilities and improving cybersecurity.

Exactly where the CoE model will take USDA is still unclear, but the department has made breakthroughs in several areas. For instance, the agency centralized CIO leadership, expediting communication and collaboration among designated mission areas.

Washington also oversaw the launch of **Farmers.gov** in February, an innovative website that features self-service applications, engagement opportunities and online loan repayment.

"When people engage USDA, it will be in an automated fashion [with] self-service portals," Washington said. "They will be able to get information anytime, anywhere, anyplace, in a secure fashion. They will have state-of-the-art technology solutions enabling real business needs."

As part of the CoE transition, USDA has embraced Technology Business Management (TBM), a set of best practices for tracking and communicating the value of IT. Using TBM, Washington plans to update his IT portfolio with greater detail about his $3 billion budget.

"One of the things that we have had to work with IT folks on is not talking about IT," Washington said. "We're talking about business value."

As the breeding ground for CoE innovation, USDA is now sharing its success. GSA announced on Sept. 25 that the Housing and Urban Development Department (HUD) would be the second federal department to adopt the CoE model.

Washington State Streamlines Efficiency With TBM

Washington state formulated a strategy in 2010 to reform its IT and boost transparency, but a lack of standardization and coordination across departments caused the plan to fall apart, leaving the state with a blank slate in 2016. Leaders seized the opportunity to start anew — using an enterprisewide reporting software to track data and, as of 2018, they have moved on to evaluating business value across agencies.

Agencies have bought in with 100 percent compliance, and the state Office of the Chief Information Officer aggregated the TBM information. The result, in one case, uncovered a hole in the numbers — with $9 million worth of spending that was missing in IT coding attributes.

Technology Modernization Board Invests in Tech

Is money keeping your tech dreams in check? Well, the newly formed Technology Modernization Board is playing genie for government organizations. For the first time in 2018, the Technology Modernization Fund (TMF) offered upfront payments to agencies hoping to overhaul their IT systems. The board sifts through proposals and chooses awardees based on merit.

Although the money comes as a loan — repayable in five years — the aim is that the initial investment will pay dividends immediately. One award winner, HUD, is estimated to save $8 million a year by transitioning to the cloud. The 2018 TMF budget was $100 million, and the hope is that funding will increase next year.

King County, Washington Fosters Citizen-Centric Service

Despite ever-changing technology requirements and capabilities in government, the end goal has remained the same: citizen service. King County, Washington has embraced IT modernization, implementing an e-debit system for online transactions to reach more residents in a diverse region.

The county, which is the country's 13th most populous, has turned to cloud-based systems for increased accessibility and dependability.

The shift has been rapid. In 2014, King County was awash in legacy applications and committed to making a change. Now, by modernizing government capabilities, the county has not only made it easier for citizens to interact with their government, but also improved security — a vital balance when dealing with both public and private data.

State Department Internship Program Goes Viral

When updating technology systems, just finding where to start can be daunting. The Virtual Student Federal Service (VSFS) program has helped government transition into the digital era by recruiting tech-savvy interns to work remotely on various projects. In 2018, 10 years after its launch at the State Department, VSFS placed interns with 514 IT modernization projects ranging from automation for the U.S. Postal Service to web design for the U.S. Forest Service.

Now, more than 70 agencies have participated. "Because it was a shared service, it made sense," said Bridget Roddy, Project Manager at State. By introducing interns to government through online internships, VSFS lets governments **increase productivity without traditional administrative barriers**.

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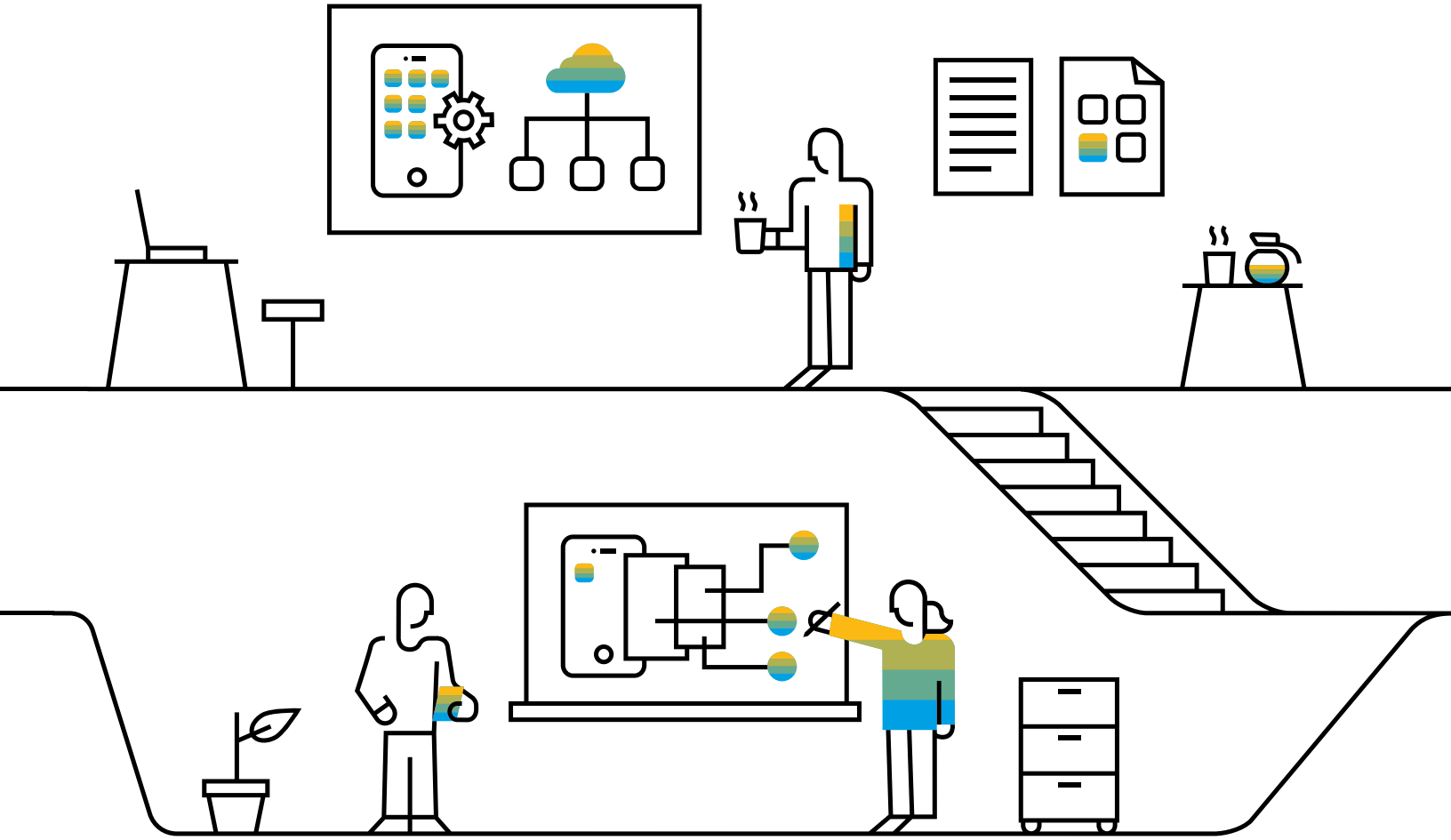

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Industry Spotlight

Why SaaS Is Your Ticket to Innovating on a Budget

An interview with Matt Gibbons, Senior Director of Public Sector, SAP Concur

In our personal lives, modernization is an everyday norm. We regularly upgrade our mobile devices. Our favorite apps constantly offer new features, and with a simple swipe we can start using new capabilities.

But embracing modernization in government comes with a unique set of challenges. "Government organizations have limited financial resources, and they have to make sure they're allocating them in a manner that is driving citizen services as a primary outcome," said Matt Gibbons, Senior Director of Public Sector at SAP Concur.

As an executive at a software-as-a-service company that provides travel and expense management services for public and private sectors, Gibbons knows firsthand the pressures that government agencies face as they balance legacy environments with demands for efficient services. He recently sat down with GovLoop to explain how agencies can afford a more modern IT environment that supports emerging technologies such as artificial intelligence (AI) and machine learning.

Before launching a modernization project, there are several questions that agencies must consider: Do I have the funds required to modernize? Do I have the people required to manage the implementation, and what do I have to give up in order to allocate money to this project?

"Going from an on-premise solution that was custom-built in the late 1990s or the early 2000s, to an environment that's hosted in the cloud and leveraging AI and machine learning is a pretty big step to take," Gibbons said. "And while some public sector organizations are doing a great job with it, many of them haven't been able to tackle that just yet."

At SAP Concur, operations for its 42,000 customers are hosted in the cloud. If you were to look at a typical day for SAP Concur in 2017, you'd see that their clients booked more than 200,000 trips in its system, processed almost 570,000 expense reports — 70,000 of which were submitted via mobile devices — and captured well over one million receipts in its system.

"In order to have truly effective machine learning you have to have vast amounts of data," Gibbons said. "We apply various machine learning algorithms to that data to produce outcomes."

High on the list of outcomes is enabling customers to create expense reports that write themselves. If you've ever had to file expense reports the old fashion way, then you know the frustrations of this often manual task. Historically, employees would gather their receipts, tape them to pieces of paper and transpose them onto a spreadsheet or other document.

"Now we're capturing that information by taking pictures of receipts on a mobile device," Gibbons said. Optical character recognition technology allows users to transform those receipts into an expense report and merge them with other receipts.

Using varying degrees of machine learning, SAP Concur can ensure that employees are selecting an airline that aligns with agency requirements, adhering to per diem rates and filing expenses appropriately, for example.

The other aspect of machine learning that is valuable for public sector organizations is auditing capabilities. Many agencies audit all of their expense reports. Much of that is mundane, manual processes that could be replaced with machine learning to review reports for any anomalous expenses and to reduce error rates.

So how can agencies take advantage of these capabilities when they are burdened with outdated technologies and manual processes?

"To the extent that public sector organizations can adopt Software-as-a-Service, meaning that they don't have to go through and build the entire infrastructure themselves, they will find it much easier to get to advanced technologies, including machine learning and some levels of artificial intelligence," Gibbons said. "If they were to have to go through and face the challenge of building it all themselves, developing the algorithms, and helping the systems to learn, that's going to take a great deal of time and money."

Technologies are changing in such a rapid pace that it's difficult — if not impossible — for many organizations to stay current with technology. "One of the most effective ways for organizations to do that is to adopt software-as-a-service," Gibbons said. "Then, the burden falls on the provider to make sure that the environment is kept current and that agencies can continuously innovate to meet their needs."

Process Management

Boston Upgrades the Budgeting Process for IT Capital Investments

The city of Boston spends more than six months producing a yearly blueprint for how it will spend its funds to support operations and make capital investments in the next fiscal year. In 2018, the Office of Budget Management (OBM) recognized that this time could be used more efficiently to guide strategic investments in citywide technology. With support from the Department of Innovation and Technology (DoIT), OBM instituted a new process for reviewing technology-related capital budget requests.

Sarah Trager, Operations Strategy Analyst at DoIT, described the transformation: "Prior to Boston's FY19 planning process, each department would submit their proposed capital budget to OBM with little discernment as to what in their proposal qualified as a capital technology funding request. This practice hindered efforts to make accurate budgetary allocations across departments and made it difficult for DoIT to collaborate with departments in developing their IT strategies for the coming year." To overcome these obstacles, OBM invited DoIT to play a bigger role in the budgeting process. This collaboration would help ensure that the projects selected for funding were realistically budgeted and represented the most efficient use of an appropriation for technology.

"This past year, for the first time, departments were instructed to isolate their technology-specific investment requests and submit them for review by DoIT and their budget analysts ahead of the capital budget proposal deadline," Trager explained. "Departments submitted a total of 65 requests via a form designed to facilitate evaluation of the need, the expected cost, the intended impact and the internal capacity for implementation of each proposal."

The review process began in OBM, with analysts evaluating proposals for their expected impact on revenue, constituents and policy goals. Twenty-seven projects out of the initial 65 advanced to DoIT for an investigation into whether technology would best address the problem presented. Through a combination of business analysis and market research, DoIT operations staff ranked all 27 proposals in order of priority.

With this input, OBM awarded $3 million for DoIT to spend on capital IT investments, which is now being used to fund 13 projects, including an automated fuel management system to better track the Boston Fire Department's fuel usage, incorporating upgrades to the city's Metrolist that advertises available affordable housing throughout the city and a Salesforce integration for the Boston Residents Jobs Policy ordinance.

Projects that didn't get funding received thorough feedback that departments can use to better prepare for future budgetary cycles. Most importantly, by investing time and resources earlier on, OBM was better able to evaluate requests and prepare funded projects for success.

"This past year, for the first time, departments were instructed to isolate their technology-specific investment requests and submit them for review by DoIT and their budget analysts ahead of the capital budget proposal deadline."

Sarah Trager, Operations Strategy Analyst, DoIT

Federal Acquisition Service Automates Contracting

Like other agencies, GSA's Federal Acquisition Service faces a shortage of resources. That's why the agency is **looking at automation** to save time and labor. In an initial pilot, one regional commissioner used RPA tools to validate if vendors were eligible to do business with government. By having a bot pull a Data Universal Numbering System number from an offer and automatically validate it, the agency could complete in 10 seconds what would take an employee 15 minutes.

In another case, the same commissioner had the automation tool pull information from vendor offers on websites and populate them into a pre-negotiation memo. Using a computer, that process went from 22 minutes to 20 seconds.

North Carolina Creates a Data Asset Catalog Service

In Autumn 2017, North Carolina's Government Data Analytics Center (GDAC) completed an enterprise data management strategy and implementation plan. One recommendation from that planning was to **create a Data Asset Catalog Service** to better collect and understand data.

GDAC is now collecting business and technical metadata about the state's critical data assets. The DMV, Department of Commerce and other agencies have signed agreements to collaboratively work with GDAC to ensure the catalog is accurate and comprehensive. "We have cataloged those assets because the data is really valuable, and whenever you want to do a data analytics effort, you need to understand what the data is, how it was produced and how it can be utilized," said Deputy CIO John Correllus.

U.S. Geological Survey Embraces DevOps

The U.S. Geological Survey's (USGS) National Geospatial Technical Operations Center hosts a recurring DevOps Sync to allow technical staff to share their effective methods and technologies related to developing in the cloud.

"The DevOps Sync is not a technical solution, but rather a recurring meeting that acts as a platform for sharing across the USGS," **wrote** Systems Development Branch Chief Brian Fox. "It has allowed not only the various science centers to learn faster, but it has also enabled senior IT leadership at USGS to get feedback on the tools their stakeholders require to develop and release faster (and less expensively) in the cloud. Specifically, the DevOps Sync was used to provide a prioritized 'wish list' of cloud capabilities to the CIO to consider by technical staff from across USGS."

Colorado Shares Lean Ideas

The Colorado Department of Transportation (CDOT) has embraced lean methodologies for years. It started its Lean Everyday Ideas program in 2013 with the aim to have "everyone, every day, improving every process and every product, to benefit every customer." But more recently, CDOT is helping its employees not only implement lean ideas, but also share them with others.

Through the CDOT **Idea Cards** portal, employees' ideas are organized. Each card shows the challenge, innovation and benefits of a project, plus contact information so that employees can connect. In 2018, over 90 ideas were shared. Those ideas include ways to optimize the use of Google Docs, create newsletter analytics reports and even use concrete slab lifters to save construction time without sacrificing safety.

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Industry Spotlight

The Journey to a Better Citizen Experience

An interview with Scott Macfee, Chief Operating Officer, Granicus

As technology continues to advance, citizens are offered an increasingly wide range of devices, platforms and applications to improve their daily lives. Many service providers, particularly in the private sector, are leveraging these new tools and technologies to provide robust, multichannel services.

But while these advancements are improving many processes, Granicus Chief Operating Officer Scott Macfee explained that these innovations can also present challenges to the public sector.

"Government agencies feel immense pressure to provide a seamless digital experience for citizens," Macfee said. "As more people become accustomed to private sector delivery speed, integration of services, easy check outs and attentive customer service, a new normal of heightened expectations is firmly set in place."

To meet this new bar, Macfee impressed the need to take a strategic approach to analyzing, streamlining and updating citizens' user experiences. Granicus offers innovative solutions for communications, content management, and meeting and agenda management that make that possible. But before agencies deploy new digital solutions, Macfee said they have to understand the current state of their customer journey by mapping the end-to-end citizen experience.

"Building a citizen journey map helps tell the full story of the citizen experience and answers important questions about the citizen's motivations and needs," he explained. "Identifying where your audience interacts with your organization will help you pinpoint opportunities to enhance the experience, thereby increasing loyalty and satisfaction."

To start a journey map, Macfee said to first gather team members from across the organization who interact with citizens on a day-to-day basis. With the right employees working together, you can ensure you know about every touchpoint that a user might have with your organization. You'll also learn where each person sees recurrent problems or executes redundant processes.

Next, Macfee encouraged agencies to seek data. "Citizen journey mapping is all about the data. What resources can help inform your team about citizen touchpoints? A few examples of important data to gather include website analytics, social mentions, and focus groups or survey results," he said.

With these two steps complete, you can create a map of the end-to-end citizen experience. That map becomes a tool for analysis. You'll notice common themes and will likely be able to group experiences by types of citizen "personas." With these personas in mind, you can evaluate each touchpoint or step in a citizen process to identify what is currently meeting expectations, what isn't, and how pain or pinch points can be addressed as opportunities to improve service.

In this step, it's helpful to include outside perspectives to validate your findings and offer solutions or ways to improve. "Granicus' Digital Engagement Services (DES) team is made up of experts that work with government agencies every day to complete this exercise," Macfee said. "The DES team operates as an extension of the team, working alongside an agency, and can be an important outside perspective throughout the exercise."

When your mapping exercise is complete, present findings to your agency's leaders and gain support for efforts to enhance the citizen experience. In many cases, your recommendation will be to invest in better technologies that improve specific touchpoints. However, it's important to continue thinking of the citizen journey as a holistic experience that should be built or improved with the entire journey in mind. To avoid adding one-off solutions that complicate, rather than streamline, the citizen experience, make sure you identify integrated solutions that fit your current organization, constituent services and processes.

"We understand the importance of providing a seamless digital experience for citizens," Macfee said. "Granicus is committed to providing the first integrated platform that connects multiple digital services and experiences. We offer an innovative legislative management solution and an expansive citizen engagement tool that solves today's objectives while anticipating future needs of a modern digital government."

With the right solutions in place, agencies can create a streamlined customer experience that presents citizens with modern, intuitive services at every stage of interaction. Communication can remain consistent across multiple channels and can be quickly updated as needed. Plus, agency workers will have more time to dedicate to mission-critical tasks, as modern digital platforms like Granicus automate many redundant manual service tasks.

The benefits of understanding your customer journey and applying integrated digital solutions to meet citizen expectations are endless. But most important is that government agencies that understand those journeys are best equipped to deliver on their mission of serving citizens.

NextGen Innovators

Each year, GovLoop celebrates deserving individuals who are selected from the public service community for their intelligence, exuberance and dedication to improving and invigorating government. Our five Public Service Award winners were recognized at our **Next Generation of Government Training Summit** on August 9-10, 2018 in Washington, D.C.

Exemplary Leader

Erika Taylor

Supervisory and Management Analyst, Health Resources and Services Administration

Taylor formed a diverse group of analysts with a variety of skills into a coherent team. "Initially she was brought in as a team member to a small group of four, but her mastery of the technical aspect of our work and her inherent leadership skills made it apparent that she would be an excellent supervisor," said Victoria Carper, a Grants Management Officer who nominated Taylor.

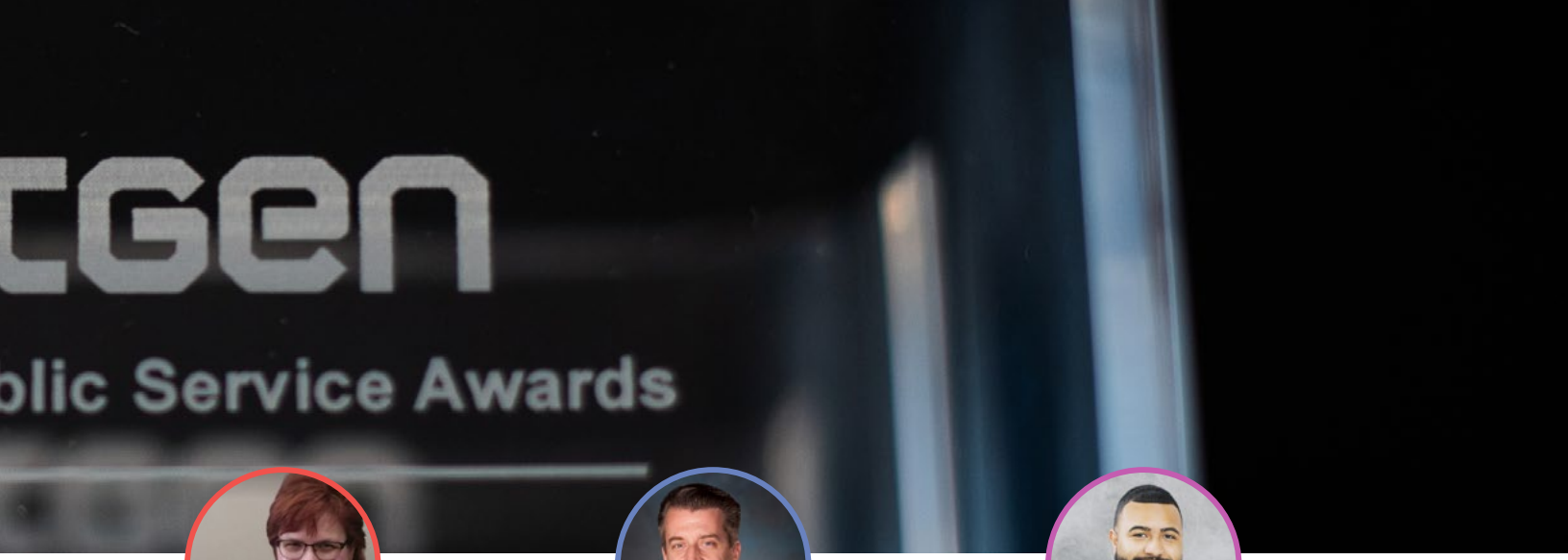
Originally, the group struggled to feel interconnected as they worked on a hodgepodge of projects. But after three years as supervisor, Taylor believes that the team now has a defined role within the division and functions as a cohesive unit. It's important to her that every team member has an opportunity to participate in multiple projects and take on a variety of responsibilities. "Everybody had something to call their own on the team," Taylor said. "I think it has helped to make everyone feel that they have value and contribute to the work that we do in a meaningful way."

Innovator

Sahra I. Torres-Rivera

Deputy Chief Financial Officer and Director of the Office of Financial Management, Food and Drug Administration

Under Torres-Rivera's guidance, FDA's Office of Finance, Budget and Acquisition has implemented an innovative new technology called process robotics, which is a computer-coded, rules-based solution that uses bots to automate human activities for repetitive tasks. For example, the program has improved the office's accounts-payable reconciliation process. "Leading innovation and change in any federal organization is challenging," said Marc Mancher, a contractor, who nominated Torres-Rivera for the award. "This team's leadership and vision was essential in getting the first process robotics solution implemented at FDA, the second such implementation in all of the federal government."



Silent Hero
Becky Jo Glover

Director of Customer Service, City of Grand Rapids, Michigan

Like many cities, Grand Rapids had an outdated website with too many web pages and not enough consistency in the presentation of information. Users found it difficult to navigate and staff had trouble keeping it up-to-date. "Becky Jo was the flag bearer for prioritizing digital services, accessibility and mobile responsiveness," said contractor and nominator Cynthia Francis. "Her goal was to ensure that the website worked for everyone, and not just for government. For that reason, she mandated that every piece of content, every service, every page on their new website was put through usability testing by the city's civic user testing group of citizen users."

By starting with data, the team could prioritize needed content and transactions and retire outdated or seldom-used pages. Analytics showed that 279 pages accounted for more than 90 percent of all page views, and 50 pages received an average of 69 percent of all traffic each month. As a self-proclaimed "data wonk," Glover played an instrumental part in shifting the website redesign process from a traditional beautification exercise to one that focused on improving the value of the city's website.

Advocate
Scott Howland

CIO and Division Chief, Information Management Division, California Highway Patrol

When Howland took the job, there was a massive backlog of collision data in the Statewide Integrated Traffic Records System. "In fact, it had never been current with CHP data," said Romy Haddad, a contractor, who nominated Howland for the award. "Through an approach that included technology and personnel, Chief Howland led the effort to modernize legacy systems and update the records across the board." During that process, Howland added data entry personnel through grant funding and deployed an electronic submission system for collision data and documentation. "This was no small feat," Haddad said.

The statewide electronic submission went live in October 2015 and by March 11, 2016, all new records became real-time and the paper backlogs were resolved. Overall, Howland has worked to increase the organization's adoption of new systems through change management.

Courageous Champion
Alex Perez

Video Services Coordinator, Aurora, Illinois

"In just his first year as director of ACTV, Alex has taken the public access station far beyond any role it has played in the past. He has launched a number of programs to get the community, and especially high school and college students, involved in ACTV operation and programming," said John Russell, a grant writer who nominated Perez.

As the sole employee of ACTV, and with a budget of only a few thousand dollars, Perez has been forced to be resourceful in operating the station. Several of the projects he's started, such as an internship program and a healthy eating show called "Aurora Eats," are created at no cost. The internship program has allowed ACTV to set up a social media presence on Snapchat, Instagram, YouTube and its own web page at a time when such community outreach features are found at very few public access stations.

Conclusion

The case studies in this guide showcase the innovative spirit that agencies must have to meet their mission goals and thrive in the Digital Age. From adopting DevOps to deploying IoT, these agencies are confronting today's complexities: a combination of shrinking workforces, declining budgets and booming technology. We hope you see these innovations as inspiration for what your agency can do with modern technologies, tools and strategies.

We can't wait to see what you accomplish in 2019!

About GovLoop

GovLoop's mission is to inspire public sector professionals by serving as the knowledge network for government. GovLoop connects more than 270,000 members, fostering cross-government collaboration, solving common problems and advancing government careers. GovLoop is headquartered in Washington, D.C., with a team of dedicated professionals who share a commitment to the public sector.

For more information about this report, please reach out to **info@govloop.com**.

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