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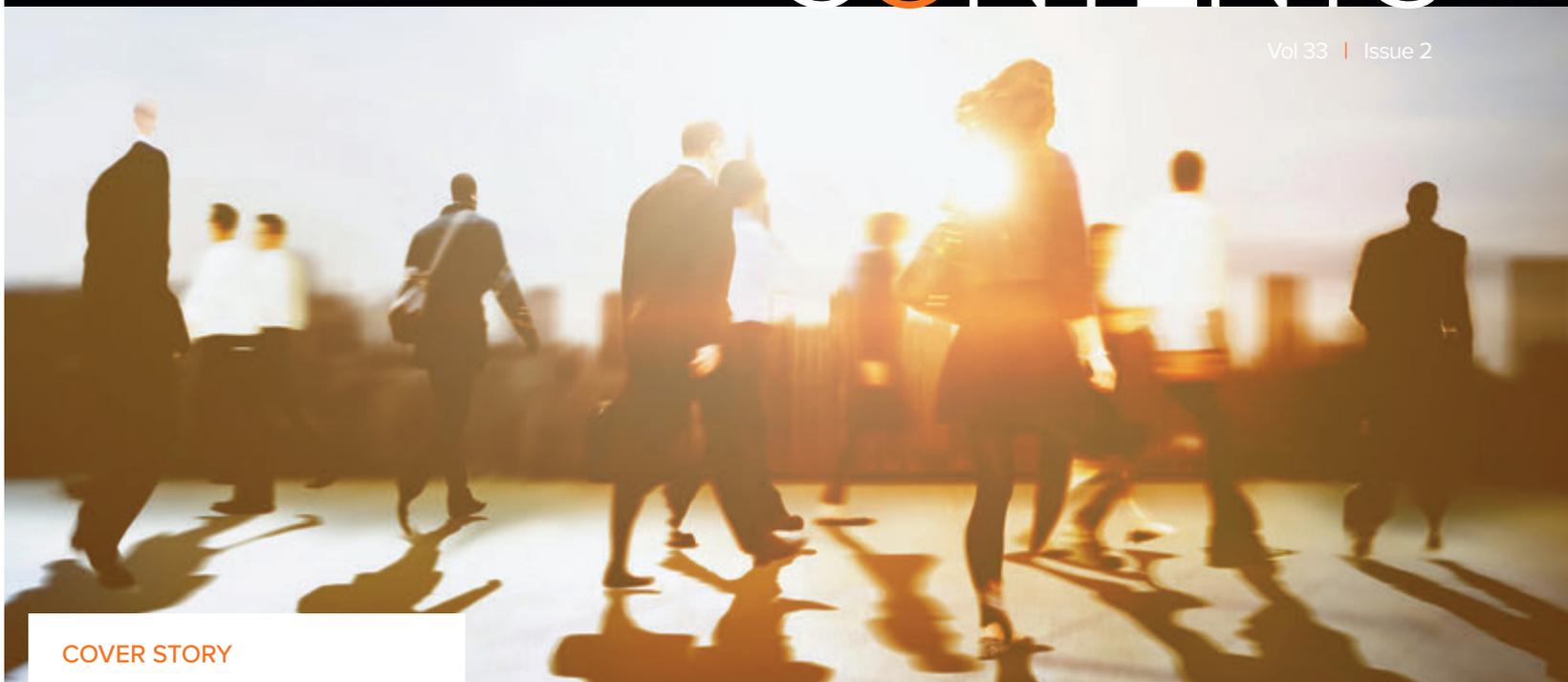
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A government executive's guide to understanding the **network of the future** and its role in transformative change.

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Building a Resilient IT Workforce

By this time in the early months of 2020, most technology leaders in government are actively working on developing their workforce to ensure they're ready for the future. And if they aren't, they should be.

Our story *The People Problem* (p. 14) includes data from the U.S. Bureau of Labor Statistics on the generational composition of the government workforce. The percentage of millennials in government lags behind their representation in the private sector, but their numbers are growing. In fact, people born between 1981 and 1997 outnumbered baby boomers in government for the first time in 2017. And while Generation X (born between 1965 and 1980) still dominates the workforce, that, too, is fleeting.

This time of generational transition presents complex issues for CIOs trying to fill open positions with talented staff and keep existing teams challenged and engaged. One key component of a successful strategy is close coordination with human resources.

"It's the role of the CIO to build a more proactive and consistent relationship with HR, so that they fully understand the challenges that IT is facing," Gartner analyst Alia Mendonsa said in our story. There is ample proof of the tech skills gap, after all, so HR and IT staff must work hand in hand to make sure they have who they need to do the people's business.

Some elements of the workforce solution are simple, but that doesn't mean they don't cost money. According to a recent survey of the Center for State and Local Government Excellence, nearly two-thirds of organizations devote money to employee training, and the pace of technological change makes investment in skills development even more important for IT staff. As skills people learned in school fade into

obsolescence, they need to develop new ones to stay relevant. And as service delivery models continue to evolve, technical employees are interacting more than ever before with a growing circle of stakeholders. This requires soft skills like communication and customer service that might not have been a priority in earlier times when technical staff interacted mostly with technology.

Career paths are individual, and putting in the time to not only define paths to advancement for various roles, but also make sure people's particular interests are nurtured, can greatly assist retention rates. That's the case in Cabarrus County, N.C., where CIO Todd Shanley ensures resources are devoted to specialized training opportunities.

"What does the county need and what are you interested in? Then we build the plan around the places where those come together," Shanley said.

Government can very rarely compete with private-sector salaries, but some are finding creative ways to make small, yet impactful adjustments. Fulton County, Ga., incentivizes performance-based increases that encourage achievements at the department level that are linked to bigger countywide goals.

Aside from compensation, employees also place a great deal of value on a flexible workplace. The option to telecommute is increasingly viable, and many roles in IT are poised to take advantage of it. A work schedule outside of the standard 8 to 5 makes sense for many positions too, and it communicates to employees that their bosses are listening to their needs, and value their lives outside the office.

While the challenge is great, government has some tools available to help develop a resilient, future-focused workforce. Even better, they have the creativity to put them into practice. 

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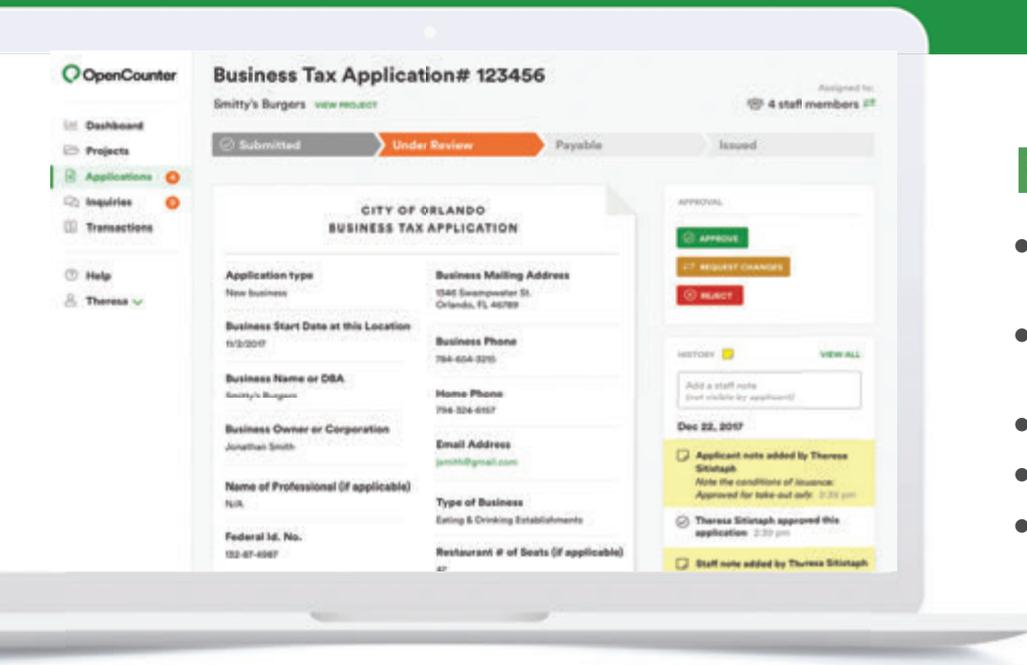
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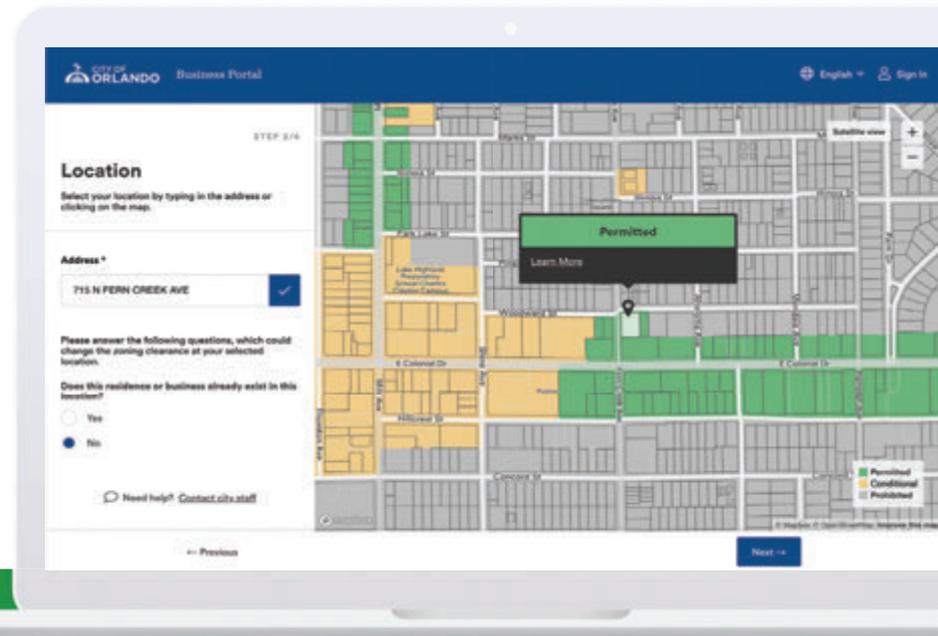


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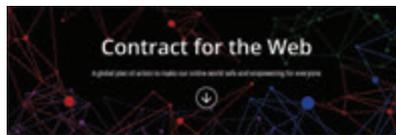
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A Better Internet

Given the prevalence of online harassment, plus the rise of cyberattacks on the private sector and government, Tim Berners-Lee, inventor of the World Wide Web, was driven to launch the Contract for the Web. With input from 80 people, the contract is a “global plan of action” to ensure the Internet is “safe, empowering and genuinely for everyone.” So far the initiative has more than 1,000 endorsements, including Microsoft and the French government.



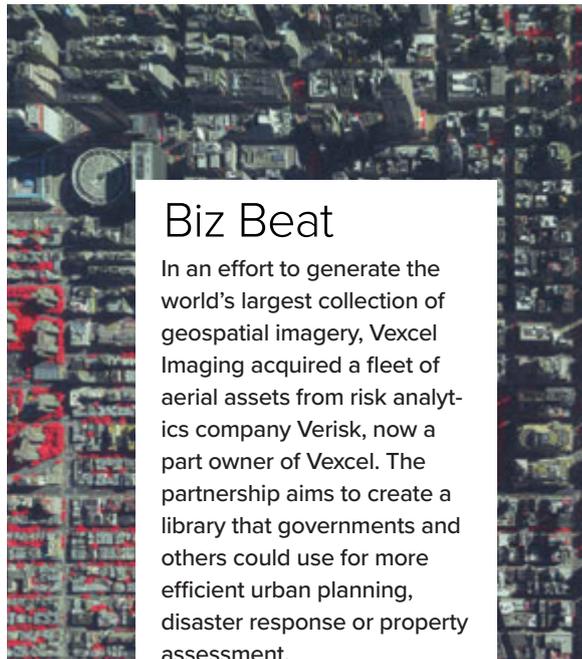
8%

The percentage of the Kansas City Area Transportation Authority budget that previously came from passenger fares. The agency has now moved to make buses free to ride.



BLOCK PARTY

The Bay Area Air Quality Management District serves more than 7.5 million residents in and around San Francisco and is starting to mine block-level data on how pollution affects the region’s varied communities. Low-emission vehicles from Aclima equipped with air-quality sensing devices will gather data as they drive, and the data will then be made publicly available and used to inform lawmakers on health-related decisions.



Biz Beat

In an effort to generate the world’s largest collection of geospatial imagery, Vexcel Imaging acquired a fleet of aerial assets from risk analytics company Verisk, now a part owner of Vexcel. The partnership aims to create a library that governments and others could use for more efficient urban planning, disaster response or property assessment.

\$140k

The amount Pensacola, Fla., paid Deloitte to assess the source and damage of a ransomware attack in January.

3

The number of agencies that will receive free access to curb space management software from the startup Coord as part of its Digital Curb Challenge to help make streets more accessible, safe and efficient.

WHO SAYS?

“[There] are computer algorithms for distinguishing people from computers, but they’re damned annoying, and sometimes you can’t do them, and sometimes you can’t figure out what it was they intended, and that’s about when you throw your laptop through your window.”

govtech.com/quotemarch2020

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70%

The proportion of teachers who give homework that requires reliable Internet, despite the fact that 15 percent of households with school-age children lack home broadband, according to the Pew Research Center.



Cloud-Ready Networks

Enabling your State and Local Government
Mission in a Cloud Native, Zero Trust World



Cisco U.S. Public Sector

Why Cloud-Ready?

State and local governments are turning to as-a-service (aaS) consumption models for many of the same reasons as the Private Sector. Cloud technologies and architectures empower agencies to:

- Enable more agile achievement of agency missions
- Address technical debt and gain access to ongoing commercial innovation
- Unlock additional IT value by integrating IT efforts and investments to deliver needed mission-impacting capabilities
- Handle and analyze growing volumes of data to support data-driven policies and operationalization of data.

When dealing with cloud applications, the leading metric for success and productivity is user experience. So it's not surprising that while 30 percent of IT Departments say they have hit roadblocks with their cloud efforts in delivering business and mission value, even more are concerned about delivering a quality cloud user experience. Now, more than ever, your agency's network is critical to your organizational and mission success.

At the state and local level, agency networks must also be able to support the growing number of hyper-distributed applications provisioned across virtual machines (VM), containers, and bare-metal hardware throughout data centers and clouds. Applications, Internet of Things (IoT) sensors, and Artificial Intelligence/Machine Learning (AI/ML) engines all generate hyper-distributed data that needs to be processed in the cloud, on the premises, and at the edge. So agencies are leveraging multicloud deployment models (private, public, community, and hybrid) to deliver best-fit services for their users and accelerate their digital transformation journey.

A key prerequisite for enabling successful cloud adoption is a network's readiness to support architectural shifts, driven by cloud and other disruptive technology vectors (including IoT, AI/ML, and big data). Cloud-ready networks enable state and local governments to deliver innovations to meet the evolving expectations of citizens and businesses.

Shifting Architectural Requirements

Today's network requirements for state and local governments are experiencing a fundamental shift as the traditional model of accessing highly centralized resources is coupled with the need for a distributed, decentralized architecture. This shift is driven by two key factors:

- Centralized cloud computing models where IaaS, PaaS, SaaS, and other Cloud Solution Provider (CSP) hosted services are consumed from public and community clouds
- Rapid growth of edge devices and the distributed architectures that enable them to process data locally as well as communicate and share resources with other edge devices.

The upsurge of edge devices and the distributed architecture to support them has given rise to a distributed architecture that brings the core building blocks of cloud (computing, storage, and networking) closer to the edge. Where latency and bandwidth constraints exist, agencies will leverage edge computing. In some cases, they leverage both an edge computing model (for real-time data processing) and a centralized cloud computing model (for heavy processing).

To facilitate their cloud journey and reduce risks, state and local government agencies will need a cloud-ready network able to support both centralized cloud and distributed architectures comprised of private, community, public, and hybrid clouds. This cloud-ready network must ensure access to the cloud across an agency's existing campus, Local Area Networks (LAN), Wide Area Networks (WAN), and data centers as well as over broadband and 4G/5G environments.

Securing Optimized Connectivity to Cloud Services

Traditional hub-and-spoke network architectures are designed to support applications and services hosted at centralized “Demilitarized Zones” (DMZs) and data centers. This layout forces the backhaul of internet traffic through the DMZ, creating inefficient traffic routes that increase the distance between the end user and application. Today, most agencies still rely on this approach, backhauling traffic destined for off-premises IaaS, PaaS, and SaaS services through a trusted, central connection point.

But the reality of today’s state and local government network landscape, with an ever-growing influx of data and devices, is pushing the limits of hub-and-spoke networks. Traditional network designs are increasingly unable to support the edge-to-cloud shift of internet traffic, making it nearly impossible for networks to keep up. This is especially true in areas like transportation and public safety.

Agency branch office or mobile users are increasing online collaboration through the use of SaaS applications like Webex and Office 365, or other cloud services. Branch-based end users are also consuming more and more bandwidth-intensive cloud-hosted applications. In this scenario, two common approaches are available to address IaaS, PaaS, and SaaS performance challenges:

- Decentralize and deploy multiple internet exits
- Provide high bandwidth connectivity directly from the branch sites.

However, the combination of security, complexity, and cost arising from the rigidity of traditional WAN technologies make these solutions impractical to implement on a large scale.

By providing an architecture that integrates routing, security, centralized policy, and orchestration, Software-Defined Wide-Area Networks (SD-WANs) enable agency branch offices and remote users operating government-furnished equipment to securely connect to applications by leveraging any combination of internet transport services (MPLS, cellular, or broadband). SD-WAN provides agencies the following advantages:

- Predictable application experience using multiple hybrid links with real-time steering based on Service Level Agreement (SLA) policies
- Zero Trust network security and segmentation
- Integrated security composed of enterprise firewall, intrusion prevention, advanced malware protection, DNS-layer enforcement, URL filtering, and antivirus
- Seamless public-cloud expansion and SaaS optimization
- Centralized management, zero-touch provisioning, and a high degree of automation
- Rich analytics for visibility, troubleshooting, and planning
- Highly scalable solution able to scale to 10,000+ locations.

With SD-WAN, state and local agencies can build a scalable, carrier-neutral WAN infrastructure while also reducing WAN transport costs and network operational expenses. The technology provides a predictable end-user experience for cloud-hosted applications and supports a seamless, multicloud architecture with simplified operational experience, integrated security, and rich analytics.

Improving SaaS Performance with SD-WAN

Poor end-user experience is one of the top complaints when an agency adopts SaaS. This is often due to unpredictable SaaS performance when confronting the many dynamic changes in internet connectivity. SD-WAN solves these problems and enables an optimal SaaS user experience across all agency branches. It does this by creating multiple internet exit points and dynamically steering around bandwidth and latency issues in real time.

The SD-WAN fabric continuously measures the performance of designated SaaS applications through all permissible paths. For each path, the fabric computes a quality-of-experience (QoE) score that gives network administrators visibility into application performance. SD-WAN technology also takes into account when making real-time decisions about the best-performing path between the end users and the cloud SaaS application. State and local government agencies have the flexibility to deploy this capability in multiple ways based on their mission needs and security requirements.

Option 1: Direct Cloud Access from a Remote Branch

Agencies using single or multiple inexpensive broadband internet circuits at remote sites, can direct select traffic destined to a designated SaaS to break out directly to the Internet. Only trusted and critical traffic to the designated SaaS will be allowed through a secure local breakout, while all other Internet-bound traffic will follow its usual path.

Option 2: Cloud access through most Optimal Regional Hub/Carrier-Neutral Facility

For agencies that want their SaaS to employ a regional hub egress architecture, SD-WAN can help ensure the best possible path through the available regional hub infrastructure. For example, SD-WAN capabilities can be deployed to dynamically choose the optimal regional gateway for the agency's Office 365 application traffic.

Option 3: Local Internet Access through Secure Web Gateways

Agencies can connect remote branches to the SD-WAN fabric using inexpensive broadband internet circuits and can apply differentiated security policies depending on the types of services to which users are connecting. Instead of sending all branch traffic to a Secure Web Gateway (SWG) or Cloud Access Security Broker (CASB), an organization may wish to enforce its IT security policies in a targeted manner by routing regular internet traffic through a SWG, while allowing performance-optimal direct connectivity for a limited set of sanctioned SaaS applications.

Leveraging SD-WAN with WAN

SD-WAN offers the capability to inject intelligence in the path selection based on applications, but more importantly, based on how well the application is performing over a given path in the WAN. State and local governments can leverage multiple benefits of SD-WAN as agency applications continue to shift to SaaS. Maximizing SD-WAN brings several key benefits:

- Multiple WAN transport paths, including cost effective Internet paths, to the regional data center.
- With SaaS application intelligence at the agency branch, the SD-WAN edge router can make intelligent forwarding decisions, over those WAN paths that meet the applications' Quality of Experience (QoE) requirements (Office 365, Amazon Web Services, Google G Suite, and others), improving overall end-user experience.
- Application aware probing, to the cloud application, to measure loss/latency and application reachability from the various exit points.

The application awareness that SD-WAN offers completely transforms the WAN from forwarding IP packets based on destination IP address/domain names, to forwarding based on application performance in the private data center, public cloud (AWS, Azure, Google, and others), and SaaS providers (Google, Cisco Webex, Microsoft Office 365, and more).¹

Ensuring Application Performance

Applications are more dynamic and complicated than ever, with many parsed into services and microservices, often deployed across on-premises and off-premises cloud environments. Delivering an exceptional digital experience in a blended workload environment requires application and IT infrastructure teams to focus on what matters most: making certain that applications always perform, whether they're deployed in traditional data centers or in complex multicloud environments.

Dynamic Workload Optimization

Agencies must be able to develop and deploy applications on the infrastructure that makes sense for their programmers, their users, and their budget. Agentless workload optimization management technologies can detect elements in an agency's environment, from applications to individual components, and deliver a topological map of that environment and its interdependent relationships. This can empower agencies to quickly model "what-if" scenarios based on the real-time environment in order to forecast capacity needs accurately and make the right deployment decisions.

Workload optimization management technologies can also automate the scaling of workloads, storage, and databases based on the level of comfort among IT personnel:

- Recommend (view only)
- Manual (select and apply)
- Automated (executed in real time by software).

Automated workload optimization can eliminate human error and free IT staff to focus on higher-value initiatives.²

Application Performance Visibility

In order to deliver consistently positive digital experiences, agencies will need to connect end-user experience and application performance to mission outcomes. A solution that can monitor, correlate, analyze, and act on application and mission performance data in real time, regardless of where the application is hosted (on-premises private, hybrid cloud, or off-premises CSP cloud) can enable developers, IT operations, and line of business owners to gain the insights needed to make mission-critical and strategic improvements.

Application performance monitoring solutions that leverage AI and ML to enable AI operations and cognitive operations can offer automated insights that allow agencies to avoid mission-impacting performance issues before they occur. In addition, they can perform automated root-cause analysis that expedites Mean Time to Repair (MTTR).³

By leveraging workload optimization and application performance visibility solutions, agencies can replace sizing guesswork with real-time analytics and modeling, so they know how much infrastructure is needed for applications to keep pace with mission demand. Gaining insights through these solutions will allow agencies to adopt a proactive approach to IT operations and stay focused on citizen experience and mission impact.

Architectural Shifts that Support Cloud Adoption

Application-Centric Infrastructure

Software-defined networking can facilitate the application agility and data center automation required to accelerate cloud adoption. An application-centric infrastructure enables simplified operations, automated

network connectivity, consistent policy management, and visibility for multiple on-premises data centers and for public clouds or multicloud environments. This infrastructure also offers agencies the flexibility to move applications seamlessly to any location or cloud while maintaining security and high availability.

Furthermore, an application-centric infrastructure captures mission and user intents and translates them into native policy constructs for applications deployed across bare-metal, virtualized, containerized, or multicloud domains. This common policy and operating model can drastically reduce both cost and complexity associated with managing multicloud deployments.⁴

DevSecOps and Containers

IT is now moving towards shorter and more iterative application development cycles, with a focus on delivering mission needs. This is leading agencies to adopt Development, Security, and Operations (DevSecOps) methodologies that enable development, security, and IT teams to work more closely and collaboratively. In parallel with DevSecOps models, containers and microservices are being adopted as the building blocks of today's software development. This is the preferred path for both new application development and application modernization projects.

Containers, which encompass the operating system, libraries, and anything else that the application needs, offer a lightweight, portable way to bundle applications. This isolation brings portability, standardization, and flexibility to development environments; applications are decoupled from the platform, so containers can move from platform-to-platform or from cloud-to-cloud without modification to the application. With containers, developers can spend less time debugging and assessing differences between environments and more time on development.

The benefits of cloud increase exponentially when organizations bring together containers and DevSecOps (a lightweight means of virtualizing applications with a methodology to join siloed IT teams). For organizations making this transition, one of the biggest challenges is maintaining common and consistent environments throughout an application's lifecycle, from development through deployment.

To address this challenge, agencies will need hybrid-cloud architectures that deploy applications across on-premises and cloud environments in a secure, consistent manner. The supporting hybrid architectures must be tested and validated, as well as deliver consistent container clusters both on-premises and in the cloud, leveraging the best attributes of each.

Agencies that can extend on-premises capabilities and resources to the cloud, and that can also utilize services and resources from the cloud on-premises, will reduce the burden on their IT teams with respect to people, processes, and skill sets. This can then accelerate the application deployment cycle, resulting in faster innovation and increased agility.⁵

Zero Trust Architecture

To better protect government's networks, infrastructure, and data from growing digital threats, state and local agencies are moving toward a Zero Trust network architecture⁶ based on a "verify and never trust" approach. Tenacious attackers and malicious insiders can penetrate perimeter-centric defenses, so the Zero Trust model is centered around one guiding principle: security must extend throughout the network, not just at the external perimeter.

Effective security depends on total visibility of your agency's network environment. To enable this, Zero Trust focuses on five key elements.

- **Eliminating unauthorized network trust:** Assume all traffic, regardless of location, is a potential threat until it is verified (inspected, authorized and secured).
- **Segmenting network access:** Adopt a least-privileged strategy and strictly enforced, granular controls so users have access only to the resources needed to perform their job.
- **Gaining visibility and analytics:** Continuously inspect and log all traffic both internally and externally, using real-time protection capabilities, to monitor for malicious activity.
- **Acting, ideally in real time:** When anomalous activity is detected in order to limit threat impact and optimally manage risk.

Network segmentation and visibility remain critical, yet users also access workloads hosted outside of an agency's network. As a result, agencies must take a holistic approach and extend their Zero Trust approach to their workforce, workloads, and entire workplace.

- **Zero Trust Work Force:** Users and devices must be authenticated. Plus, access and privileges must be continuously monitored and governed. Users must be protected as they interact with the internet.
- **Zero Trust Workplace:** Access must be controlled across the entire workplace, including the cloud and edge. This is critically important as greater use of IoT and machine-to-machine sensors are becoming increasingly critical to successful agency mission and business outcomes.
- **Zero Trust Workloads:** Granular access control must be enforced across the entire application stack, including connections between containers or hypervisors in the cloud as well as traditional agency data centers.⁷

Summary

As state and local governments push forward with digital transformation, cloud-ready networks are essential to enabling improved citizen experiences, increased productivity, and better mission outcomes.

Cloud-ready networks provide simplicity, adaptability, automation, security, and application-awareness. These capabilities are key to supporting the new world of government IT, where applications are deployed across multi-cloud environments and data is created and processed across the edge to cloud continuum.

Building on a solid Cisco architecture that leverages government's broad existing investments can help your agency accelerate citizen-facing innovation and enhance security as you move to a Cloud Native, Zero Trust world.

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3.

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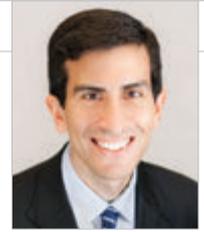
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Top-Down Security

More state and federal government partnerships are needed to build up local cybersecurity capabilities.

Cybersecurity continues to be a major challenge for state and local governments, and the issue will likely grow in importance in the coming year.

First, they are popular targets. During the first half of 2019, nearly two-thirds of ransomware attacks targeted state and local governments. Second, they face a multitude of threats — data breaches, ransomware, phishing, malware and more — and they must be prepared to defend against all of them. For example, last year, government officials in Cabarrus County, N.C., fell victim to an online social engineering attack in which the scammer stole \$1.7 million in taxpayer funds. Third, and perhaps most important, with continued growth in e-gov applications and smart city initiatives, state and local governments are collecting and storing more data than ever before. Securing this information will need to be a top priority.

Unfortunately, many agencies simply aren't up to the task. They don't have the talent, training or resources to respond to the most advanced attacks. Nor is it necessarily reasonable to expect them

to. They can outsource some of these security roles to the private sector, just as they do with other IT responsibilities, but they still must be accountable.

In many cases, the most effective response to cybersecurity incidents will entail government agencies pooling resources

and capabilities. For example, last July, Louisiana Gov. John Bel Edwards declared a state of emergency after multiple public school systems in the state were hit with a ransomware attack. The declaration allowed the governor's office to direct resources from the State Police, the Louisiana National Guard and the state Office of Technology Services, among others, to create a coordinated response to the attack.

Some efforts underway to make this type of collaboration on cybersecurity issues more routine are coming from partnerships between state and local governments. In the 2019 State CIO Survey conducted by the National Association of State Chief Information Officers (NASCIO), 65 percent of states reported providing security services to local governments, up from 54 percent in 2016. States are assisting local government agencies with issues such as election security, ransomware response and cyberincident response. For example, Pennsylvania provides statewide access to a cloud-based anti-phishing training program as part of its "PA CyberSafe" program. But many states still do not have such initiatives or their efforts are incomplete. In a recent report, both NASCIO and the National Governors Association called for states to do more outreach to local government, such as by marketing state-level security services, hosting cybersecurity summits and including local governments in service contracts.

The federal government can also increase its support to state and local

governments, and there are some promising initiatives. Congress passed the DHS Cyber Hunt and Incident Response Teams Act in December 2019, which established permanent teams in the Department of Homeland Security (DHS) to help prevent and respond to cybersecurity incidents. State and local governments, among others, can request assistance from these teams in the event of an attack or security threat.

Congress is also considering additional legislation to increase federal support for state and local cybersecurity efforts. In January, Sens. Hassan, Cornyn, Peters and Portman introduced S. 3207, the Cybersecurity State Coordinator Act of 2020, which would provide each state with a federally funded cybersecurity coordinator based in DHS' Cybersecurity and Infrastructure Security Agency. The coordinator would be responsible for helping to prevent and respond to cybersecurity threats by working with federal, state and local governments, as well as local schools and hospitals.

The reality is that every jurisdiction is not going to have the same level of training and resources to respond to cybersecurity incidents. But ignoring these problems will not fix them. When it comes to measuring risk and implementing countermeasures, policymakers must take a whole-of-government approach that spans jurisdictions. States are not secure if their local governments are facing unmitigated cyberthreats, and the nation is not secure if states are vulnerable. [GFI](#)

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.

Washington D.C.'s Department of Health Care Finance is a trailblazer, reinventing caseworker training and support

DHCF is DC residents' gateway to health and human services

The Department of Health Care Finance (DHCF) is the District of Columbia's Medicaid agency, charged with improving health outcomes by providing residents access to comprehensive, cost-effective, quality healthcare services. In 2013, DHCF launched the District of Columbia Access System (DCAS), an integrated eligibility system for Medicaid, the Supplemental Nutrition Assistance Program (SNAP), Temporary Assistance to Needy Families (TANF) and other programs.

"At least one in two DC residents touch our agency at some point, and our user base continues to grow," says Paul Hunt, DHCF's organizational change management lead, "which means we need to think about things like how to serve more residents more efficiently, ways to provide a more intuitive customer experience and how to do that all without sacrificing support for employees."

HHS organizations are evolving

DHCF's goals reflect a larger trend sweeping health and human services (HHS) agencies. The 2010 Patient Protection

and Affordable Care Act changed longstanding approaches to determining eligibility for benefits, placing new emphasis on the use of technology to qualify consumers for assistance.¹ To encourage greater integration of state eligibility systems, the federal government also allocated funding to states investing in eligibility and enrollment systems.² In response, states began to strengthen the connections between their health and human services programs and increase data interoperability and systems integration, also referred to as integrated eligibility.

Integrated eligibility systems serve as a watering hole for people to learn about and apply for a broad range of HHS programs. The unified, consistent user interface across services makes it easier for clients to enroll in programs for which they are eligible. Such systems can also potentially speed up the benefits approval processes, improve the customer experience and streamline enrollment steps — all while lowering administrative costs.

Migrating to an integrated eligibility system however represents a significant change. It requires HHS agencies to look at how they conduct business from one program to the next, and train caseworkers to use new technology systems that determine eligibility across a range of programs rather than just one. The key to success during this transition is employee training and support.

Hunt was tasked with leading this shift at DHCF, driving change management activities as well as developing an end-user transformation strategy.

“As we were migrating to a new integrated eligibility and enrollment system, we needed to think about how we would enable our staff to adapt and thrive in this new environment, as well as lay the foundation for District residents to apply for all types of HHS benefit programs via any channel on this platform.”

A self-directed knowledge base and support system

Hunt and his team launched myDCAS, a centralized caseworker portal and knowledge access system built on Salesforce Service Cloud. MyDCAS serves as a contact center and case management solution in one, providing employees the information they need to help answer constituent eligibility questions and process applications within a single system.

MyDCAS includes a Salesforce-based knowledgebase with step-by-step guides, training videos and FAQs (including a Yelp-like rating system) previously spread across multiple locations.

“Employees can check the FAQs to find answers about the DCAS implementation overall, the impacts of it, things they should be aware of,” says Hunt. “They can get answers to their questions very quickly and easily.”

The knowledgebase also includes a self-service ticketing system that allows employees to submit a ticket directly to the help desk and enables caseworkers to check the status of tickets they’ve submitted. Finally, MyDCAS integrates third-party systems, including Drupal pages that house static information like intake forms, eligibility applications and more, as well as a custom learning management system that allows employees to take online courses or register for training.

“The system was built to be seamless,” says Hunt. “It’s intuitive and provides employees a very natural way to get the information they need. It also provides a simple way for them to escalate up to different levels of support, whether it’s the help desk or additional training.”

Simplified support, more effective caseworker training

Today, rather than searching PDF-based job aids, DHCF employees can find the information they need using MyDCAS.

“We can see where there may be training gaps across the agency, or if certain individuals need more support in specific areas. Having that data will make us more efficient and effective in our approach to training.”

Paul Hunt, Organizational Change Management Lead, DHCF

This ensures they aren’t accessing outdated or inaccurate data. It also means they spend less time searching for the information they need or on the phone with the help desk. A month into the MyDCAS launch, DHCF was already experiencing a drop in help desk calls.

Meanwhile, analytics embedded in the myDCAS portal enable DHCF to fine tune caseworker training based on the questions asked or issues raised.

“We’re not throwing everything at the wall just to see what sticks anymore,” says Hunt. “We can see where there may be training gaps across the agency, or if certain individuals need more support in specific areas. Having that data will make us more efficient and effective in our approach to training.”

Once fully implemented, DCAS will touch multiple agencies across the District. Between caseworkers, district employees and partners, the agency will go from supporting about 900 users to supporting about 4,000 users. DHCF leaders are confident myDCAS will provide caseworkers a more advanced support system, more accurate information and access to continuous training so they can provide fast, consistent support to the growing number of constituents in need of services.

“Even as the number of residents seeking our services grows, we’ll be able to serve them efficiently,” says Hunt. “We’ll enable a more intuitive customer experience without sacrificing support for our valued employees.”

ENDNOTES

¹Integrating Health and Human Services Programs and Reaching Eligible Individuals under the Affordable Care Act: Final Report, The Urban Institute, <http://www.urban.org/sites/default/files/publication/44371/2000153-Integrating-Health-and-Human-Services-Programs-and-Reaching-Eligible-Individuals-under-the-Affordable-Care-Act.pdf>

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New Heights

At the Consumer Electronics Show in Las Vegas in January, Uber took its efforts to launch an air taxi service to the next level. The ride-sharing company announced a partnership with automaker Hyundai and unveiled a full-scale model of a flying car, the S-A1. The idea behind the collaboration is that Hyundai will bring its car manufacturing experience together with the ride-hailing software platform of Uber Elevate, the company's air transit arm. The S-A1 is designed to carry four passengers at up to 180 mph around 1,000 to 2,000 feet above the ground for trips as long as 60 miles. Uber Elevate isn't yet ready for take-off, though. The endeavor must first overcome many of the same government regulatory hurdles it has for traditional car-sharing, as well as build the necessary infrastructure for air travel, like "skyports." In September 2019, Uber leased space in Chicago's Old Post Office, which the company reports has plenty of roof space for air taxis.

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Amy Tong

CIO, California

As chief information officer for the country's most populous state, and the world's fifth largest economy, Amy Tong's work leading the California Department of Technology is no small task. In the position since 2016, Tong brings extensive state IT experience in a number of agencies to her work that encompasses not only what's next in tech, but making sure all residents of the state's diverse communities can access state services.

1 How is the Department of Technology working to help efforts to combat California's growing wildfire problem?

In response to the immediate need, we very quickly stood up a website that is a central hub of all of the emergency response information available at response.ca.gov. We're trying to make information distribution to the residents of California a lot easier, and rather than projecting a list of websites and resource centers across the state, whether at the state or local level, we consolidated all this useful information into a one-stop location. And we specifically made the website very lightweight and

easy to access, knowing that when people are in the middle of an evacuation, for example, they're not going to have good connectivity, and they just want to get to help quickly. It's part of a culture change we're making toward human-centered design. It's about what's most convenient for the user.

2 What else are you working on to make government more accessible?

We were seeing that many state agencies were falling behind in coming into compliance with AB 434 [a 2017 law requiring that all state websites be accessible for all users]. But it's not due to a lack of trying; it's just

that many of the state entities have decades of historical documents that need to be posted for transparency purposes and ease of access. So the Department of Technology was able to work with Microsoft Cognitive Services and the Department of Rehabilitation to develop our OCR [optical character recognition] bot specifically to allow any department to run through attachments in a batch process and turn them into text files using AI, at a rate of about 20 seconds per page.

3 How do you address cybersecurity relative to those new technologies?

The awareness that everything you do needs to have a cybersecurity mindset has become quite prevalent. So for all the portals that we roll out — in addition to the performance check, redundancy check and resiliency check — a cybersecurity check is part of the routine. We know that ultimately data needs to be very safe and protected.

We are in the midst of working with the administration on a data use agreement for all of the cabinet agencies that would address all of these sensitive personal data issues. While that policy side is being worked through, our technology side is gearing up for expanding the data platform to be able to address the exchange of that sensitive data. It's going back to that human-centered design thinking. Many departments are serving the same client, and we need to have the ability to look at what services an individual is receiving from the state and therefore improve their experience in dealing with government.

4 What are you doing to ensure connectivity for all Californians?

We have the privilege to lead the Broadband for All initiative. This is an essential part of state infrastructure, knowing everybody is relying on digital services to help with their routine, their work, forgetting that many in rural communities or even urban areas do not have good coverage and don't have access to information. It's part of a digital equity conversation. We can focus on the front end to build beautiful apps, but if we don't have a way to deliver them, it defeats the purpose. Technology these days is not a support role. It's an enabler for how we deliver services and it's very comprehensive. [BT](#)

— Lauren Harrison, Managing Editor

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The People Problem

State and local IT agencies are looking for — and finding — new ways to create resilient, future-ready teams.

By Adam Stone



With ongoing workforce shortages in the technology sector, much has been said about the need for government to get more creative in its IT recruiting efforts. But there's a second half of the equation that often gets overlooked. As recruiting gets ever more competitive, there's a growing need for enhanced IT resiliency.

CIOs need to look at workforce planning for the long term. It's no longer enough for IT to just "keep the lights on," maintaining a functional and secure infrastructure. In a successful IT team, skilled professionals need defined pathways, continuous training opportunities and a sense that government offers them a place to build a career within a positive work culture.

In a sense, demographic changes work in favor of state and local efforts to promote IT longevity. For a generation of workers who saw their parents' work lives disrupted by the recession, a long-term career in government may look tempting. "In government agencies, you don't get fired easily. They also have defined benefits:

You have a timeline to retirement, you have safety over time," said David K. Johnson, a Forrester principal analyst serving chief information officers. "Two big sources of uncertainty are wiped off the table."

In order to leverage that advantage, government CIOs need to work hand-in-glove with human resource professionals. They must emphasize ongoing training and build a strong workplace culture. They also need to meet emerging demands for a flexible workplace. And then there's the money: When corporate dollars lure top talent away, government has to raise the stakes, without busting the budget.

All this may sound like a tall order, but workforce resiliency is an IT imperative. With state and local government spending more than \$107 billion a year on technology according to the U.S. Bureau of Labor Statistics, a stable workforce is a must-have, and it starts with a solid relationship between IT and HR.

63%

of governments earmark funds for employee development

Source: Center for State and Local Government Excellence 2019 Workforce Survey



"IT'S THE ROLE OF THE CIO TO BUILD A MORE PROACTIVE AND CONSISTENT RELATIONSHIP WITH HR, SO THAT THEY FULLY UNDERSTAND THE CHALLENGES THAT I.T. IS FACING."

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PARTNERS IN RESILIENCE

In Fulton County, Ga., the top HR executive considers himself a lead partner in promoting IT resiliency.

"We try to have conversations on a monthly basis to figure out what their needs are," said Kenneth L. Hermon Jr., chief human resources officer. "When we hear that they are losing a database administrator to Dekalb County for \$2,000, HR can scour all our counterparts and develop a retention policy. Then if we hear an employee is leaving for another entity, IT has the ability to counter that offer."

When such relationships don't emerge organically, experts say the burden falls to IT leadership to initiate stronger ties. "It's the role of the CIO to build a more proactive and consistent relationship with HR, so that they fully understand the challenges that IT is facing," said Gartner analyst Alia Mendonsa. When the two are working in sync, a powerful synergy can occur. IT can provide HR with modernized management tools, "and HR in turn can provide key market information to help make compensation packages more competitive."

When IT and HR are teaming effectively, one of the first areas they will likely address is training — a key component in the overall formula for IT resiliency.

TRAINING UP

Because IT is a moving target, most technology professionals rank ongoing

44%

of state CIOs report building "talent networks" as a major way of attracting and retaining talent, up from **29%** in 2017

Source: National Association of State Chief Information Officers 2019 State CIO Survey

training among their top professional concerns. Some 63 percent of government entities devote funds to employee development, according to the Center for State and Local Government Excellence (SLGE) 2019 workforce survey.

On the flip side, a lack of skills enhancement will undermine team longevity. "When government employees are frustrated, it's because they don't have the basic tools they need to do their job," Johnson said.

In Cabarrus County, N.C., CIO Todd Shanley offers a range of online training opportunities, and he backs up those classes with a comprehensive training plan developed in collaboration with supervisors and staff members. "What does the county need, what are you interested in? Then we build the plan around the places where those come together," he said.

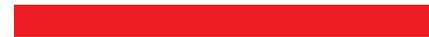
Hermon said that Fulton County has been focused more acutely on employee development lately, specifically as a part of its IT employee retention efforts. "You might have been here for five or 10 years,

and we've never sent you to a formal certification program or a training program," he said. "It was obvious to us that employees were clamoring for those kinds of things. They wanted us to show that we believe in them and that we would invest in them."

In Tennessee, Chief Learning Officer Antonio Meeks oversees a four-tier certificate program, a pyramid of learning that includes both nontechnical and technical skills. For IT professionals, "it is a strategic methodology for developing employees and ensuring they can be successful in their roles," he said.

People aren't required to follow the path, but for those seeking advancement within the department, it helps to have a well-defined avenue for training opportunities. "It's a way of letting employees know that you are invested in them, you are invested in their growth and invested in their development," Meeks said. "We know that 90 percent of millennials think

"WE KNOW THAT 90 PERCENT OF MILLENNIALS THINK LEARNING AND DEVELOPMENT OPPORTUNITIES ARE A REASON TO STICK WITH AN ORGANIZATION, SO THIS IS A DRIVER FOR RETENTION."



learning and development opportunities are a reason to stick with an organization, so this is a driver for retention."

He noted that while practical skills factor high on the state's training regimen, IT leaders also need to put a heavy emphasis on the soft side. "We are shoring up their people skills: working with others, team building," he said. "There's nothing worse than having to go to the 'mean IT person' in order to get things done, or the IT person who makes you feel like you are dumb for asking the question."

In addition to training and certification, HR and IT have another area of common interest: They can work collaboratively on job classifications in order to ensure the right people are in the right places, and are receiving appropriate compensation.

"The duties for a person in technology can change pretty frequently, and we need to refresh those duties so that when we look at the market, the job description truly aligns with the work that person is performing," Shanley said.

In addition to ensuring accurate salaries, job reclassification can be used as a means to hang on to rising talent. "We grew someone off our help desk to support our physical security systems," Shanley

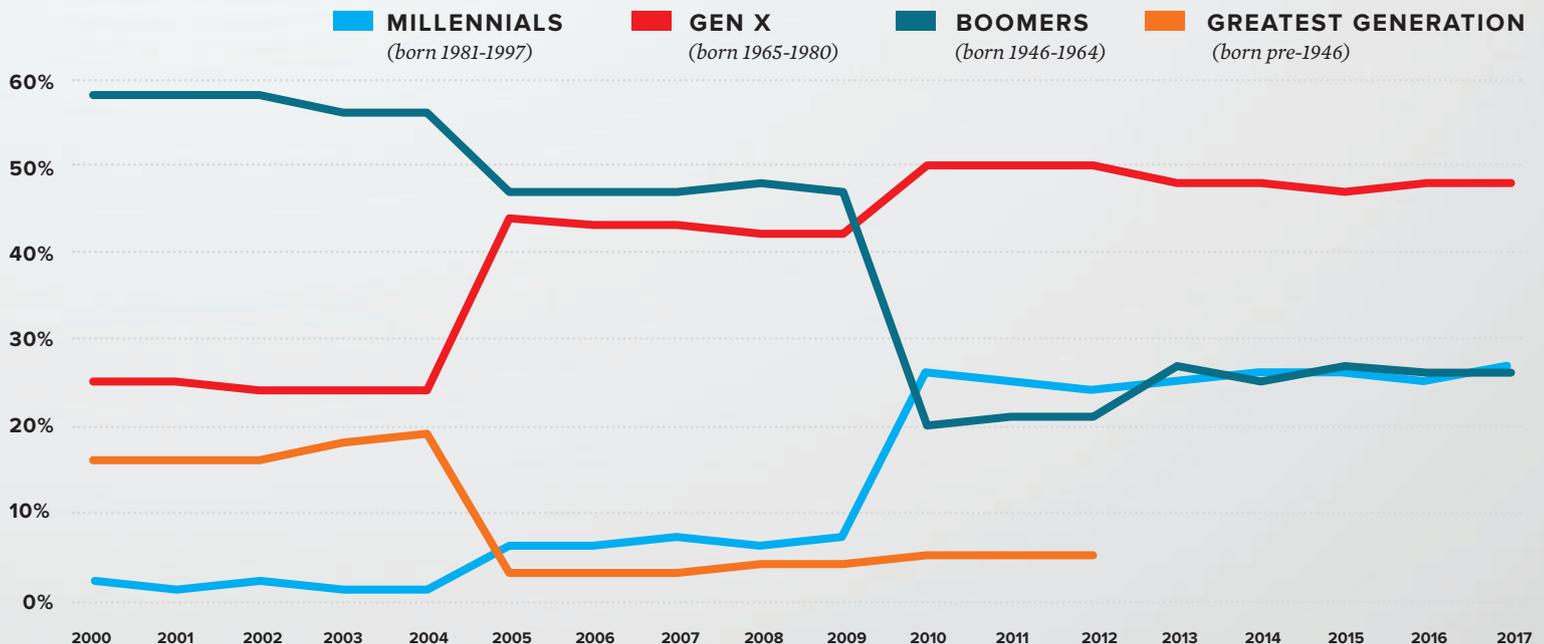
29%

of governments report using employee engagement surveys

Source: Center for State and Local Government Excellence 2019 Workforce Survey

GENERATIONAL GOVERNMENT

As older groups age out of the workforce, millennials now edge out baby boomers as a percentage of public-sector workers. In the private sector, for comparison, in 2017, millennials made up 38 percent of the workforce; Gen X represented 41 percent and baby boomers just 21 percent.



Source: Bureau of Labor Statistics.

said. “We saw what he was interested in, and were able to pull him in that direction. To retain that individual long term, we reclassified a position in order to give him those additional responsibilities.”

This kind of strategic use around job classification can be a boon to long-term personnel management.

“When people have a sense that they are working outside their classification, they can get frustrated if they feel like they are being asked to do things that were never part of the job description,” said Gerald Young, senior research associate at the

Center for State and Local Government Excellence. “If you can reclassify a position and bring it up to date, there can be recognition and perhaps even compensation for those additional tasks.”

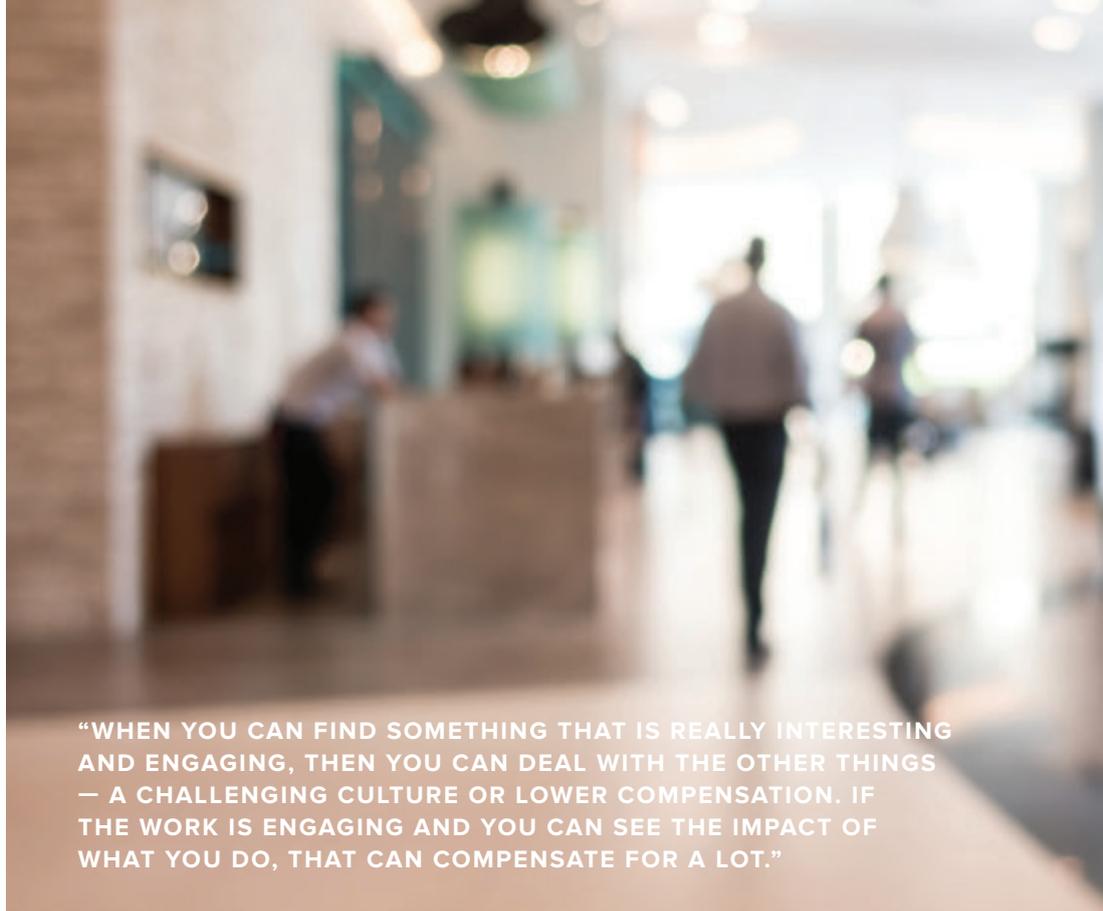
These specific areas of overlap

between HR and IT, areas such as training and job classification, can also be seen in a broader context. They are part of the cultural fabric of the institution. That fabric — not just what we do, but who we are and how we work — forms the backbone of any IT resiliency effort. In order for people to stay around long term, they need to feel personally invested in the enterprise.

40%

of state and local governments incentivize retention with merit-based pay raises

Source: Center for State and Local Government Excellence 2019 Workforce Survey



“WHEN YOU CAN FIND SOMETHING THAT IS REALLY INTERESTING AND ENGAGING, THEN YOU CAN DEAL WITH THE OTHER THINGS — A CHALLENGING CULTURE OR LOWER COMPENSATION. IF THE WORK IS ENGAGING AND YOU CAN SEE THE IMPACT OF WHAT YOU DO, THAT CAN COMPENSATE FOR A LOT.”

To that end, it’s worth taking a deeper look at the ways in which that culture gets communicated. The ins and outs of employee engagement are another key element in the overall retention effort.

GETTING ENGAGED

For Joe Cudby, engagement begins with the work itself.

“The language I use with my team is ‘play,’” said Cudby, Indiana’s chief technology officer. “When you can find

something that is really interesting and engaging, then you can deal with the other things — a challenging culture or lower compensation. If the work is engaging and you can see the impact of what you do, that can compensate for a lot.”

He says the best way to foster that sense of engagement is to give people choices in their work. He’ll define the big job, the major task at hand, and then invite his team members to carve out for themselves the bits that seem most interesting. “When I give people the opportunity to have some selection in what they would do, they tend to be more engaged in it,” he said.

Across state and local government, the most successful employee engagement efforts are those that start with the employees themselves. Rather than pushing information from the top down, successful agencies invite workers to take the lead.

“This is a participatory model, one that listens and encourages ideas to be explored and implemented,” Young said. “Those employees are more likely to feel valued within the organization.”

This approach goes beyond empowering employees to try out new approaches or take on new tasks. “It’s about letting

WHAT PERCENTAGE OF THE PUBLIC IT WORKFORCE WILL BE RETIRING IN THE COMING YEAR?*

ANSWER%	STATE	CITY	COUNTY
Less than 5 percent	9%	75%	58%
5-10 percent	53%	23%	34%
11-20 percent	23%	2%	9%
21-30 percent	13%	0%	0%
31-40 percent	2%	0%	0%
41 percent or more	0%	0%	0%

Source: Center for Digital Government
*State data is from 2018; city and county data is from 2019.

In 2018, California consolidated its IT job classifications from 36 down to 9, a step 33% of CIOs say would be most impactful in reforming their state IT workforce

Source: National Association of State Chief Information Officers 2019 State CIO Survey

56%

of government workers say their pay is on par with industry

Source: Center for State and Local Government Excellence 2019 Workforce Survey

them voice their ideas and concerns, their satisfactions and dissatisfactions along the way,” Young said. “You need an organizational culture that can hear from them and grow as a result.”

In Fulton County, Ga., Hermon makes that tangible with an employee engagement survey, conducted annually for each of the past four years. He’s not alone: 29 percent of respondents in the SLGE report said they use such tools.

Hermon said the key to success is not just listening, but also acting on what he hears. “We try to fix the things that can be fixed quickly and we put plans in place to tackle the others,” he said. Responsiveness in turn drives engagement: People feel empowered when those above respond to their concerns.

“It’s about developing trust between myself and the IT people,” Hermon said. “We also have chat sessions where we invite employees from the IT department, with no managers in the room, so that they can speak freely and can tell us what is on their minds.”

Others look to drive engagement through transparency. When people have a solid understanding of what’s going on across the IT shop, the theory goes, they are more likely to be personally invested in the outcomes.

In Cabarrus County, for example, Shanley uses wellness dashboards to track the progress of a wide range of projects. “When people have a better understanding of what is going on in the entire environment, it improves the mood across the entire department,” he said.

THE BOTTOM LINE

State and local IT leaders can listen thoughtfully and create a supportive culture. They can offer training and partner with HR to shape career paths. But let’s get down to brass tacks: Can they let you work from home, or pay you more? These are arguably harder questions, but some are finding practical answers.

“We have a good cross-section of IT people who telecommute,” Hermon said. “But we’ve learned from the mistakes of industry. We set a maximum of three straight days of telecommuting, so you still get that level of accountability and those interactions with colleagues.”

Cudby has been working from home for years and he encourages his staff to do the same. But he admits it is a balancing act. “When it’s all in the cloud and nothing’s on prem, I don’t need you to be physically here to do your work,” he said. “But we need to teach managers new ideas about accountability — how to work in that kind of environment and how to manage in that kind of environment.”

Striking that balance is critical to long-term success. While just 56 percent of government workers say their pay is competitive, 88 percent say their benefits are on par with industry, Young said. Flexible work, including work-from-home and flexible scheduling, helps to drive that stat.

Money can be trickier — there’s only so much — but some have found creative ways to close the gap. For example, some 40 percent of state and local entities encourage retention with merit-based salary increases, according to the SLGE survey.

Fulton County has implemented raises of up to 3 percent every three years based on departmental performance. “We wanted to incentivize the entire workforce to work as a team, so every department had to tie their specific goals to the county’s broader goals,” Hermon said. “The compensation piece is important. Our salaries will never be private-sector levels, but we need them to be competitive.”

In Cabarrus County, HR conducts a salary survey every two years and adjusts pay rates accordingly. In Tennessee, the average employee salary has gone up \$5,000 over the past five years. “We are really working on that, including looking at IT and reclassifying positions, which has led to salary increases,” Meeks said.

Money fixes a lot of things, but it’s not the only factor on the table. Even when salaries are stuck, there is much that IT leaders can do to position state and local government as an employer of choice.

“Government is constrained financially, but pay is only one dimension of satisfaction,” Johnson said. “You can provide training and growth opportunities that people couldn’t get in the private sector. You can give them the chance to build their skills and to find something meaningful in their work.”

All that together can add up to an IT team that is resilient over the long haul. 

73%

of state CIOs say nonfinancial benefits like greater job stability are one of the top ways they attract and retain a highly skilled workforce

Source: National Association of State Chief Information Officers 2019 State CIO Survey

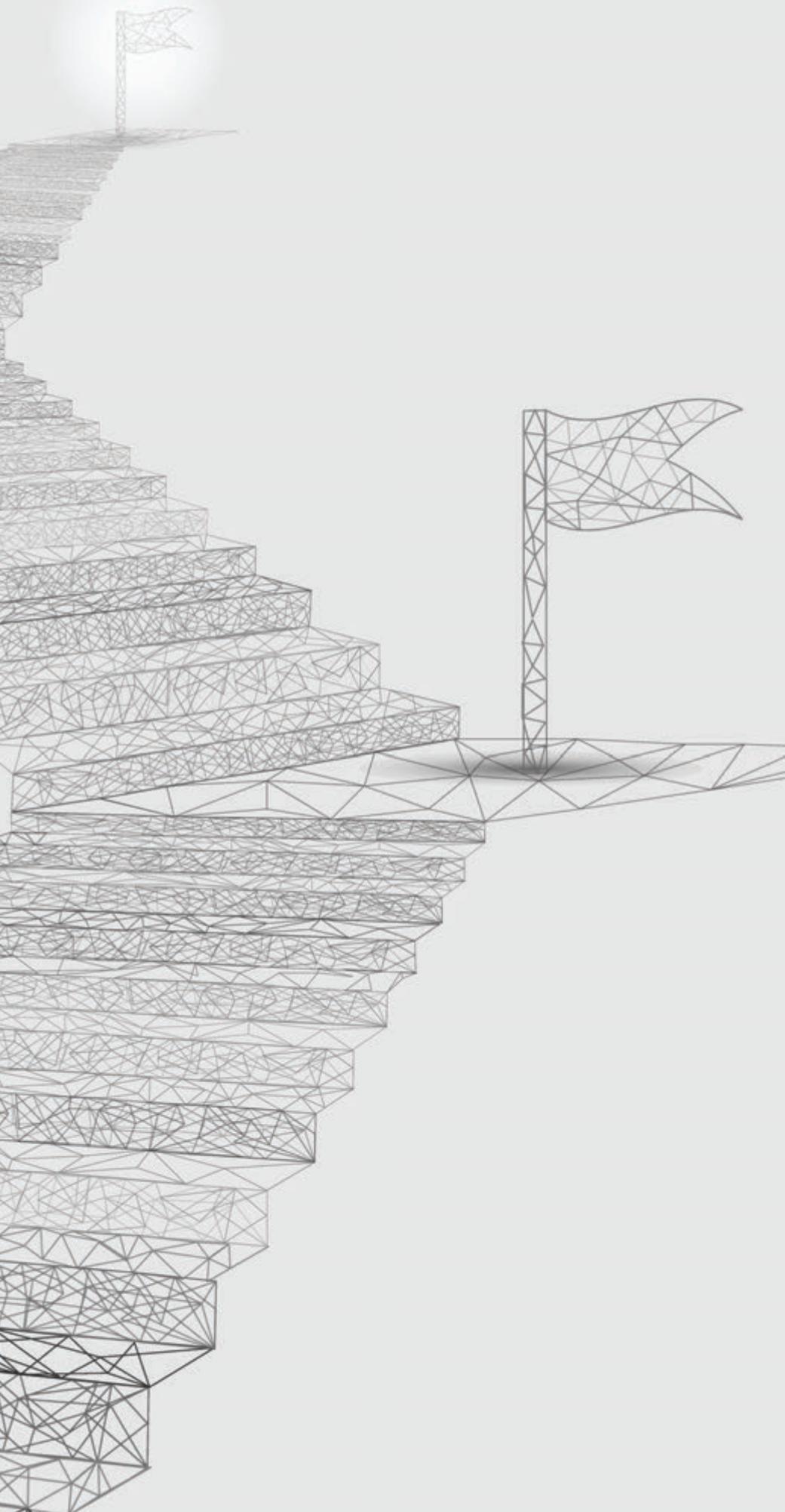
adam.stone@newsroom42.com

A large, stylized wireframe staircase is the central visual element, extending from the bottom left towards the top right. It is composed of a grid of lines forming steps. Three flags on poles are positioned at different levels of the staircase, suggesting milestones or goals. The background is a light, hazy gradient.

The Structure that Suits

A look at several
jurisdictions' paths
to the IT environment
that works for them.

BY JED PRESSGROVE



Consolidated. Federated. Hybrid.

Which option is best, and more fundamentally, what does each one look like? The question of how government IT should be structured has no easy answer. It depends on who you ask, and a long list of variables: leadership, staff, services, governance, infrastructure, ideology and multiple other factors across every agency in a municipality or state. And so, settling on an overall IT structure is like making dozens, if not hundreds, of critical decisions. And what goes without saying is that nobody is starting with a blank canvas.

In recent years, U.S. governments have tended to favor a centralized, or consolidated structure for information technology, where a single entity handles most IT services for all departments. Of the 15 states that transitioned to a different IT structure between early 2016 and the end of 2018, 13 moved in this direction, according to data collected by the Center for Digital Government.*

But not everyone wants to fully centralize. Five of the 13 states switched to a more hybridized system, where individual agencies still hold some authority over their IT. Moreover, consolidating IT requires years of patience and persistence. As put by Mississippi CIO Craig Orgeron, one of the country's longest serving state chief information officers, "What I know about consolidations from other states that have done them is that they're very, very difficult, and they're very, very painful," he said, adding, "Not that they're not good to do."

We reached out to a number of city and state tech leaders about how their IT operation is structured and why. Here's what we found.

Nebraska

In 2017, the Cornhusker State completed its IT consolidation under the leadership of CIO Ed Toner. As with other similar initiatives, cost savings was a major driver. The state eliminated more than 10 percent of its server farm through consolidation, and Toner's team also set up eight service centers that support clients in different regions of the state, reducing the travel time to deliver services. "We were traveling as much as six hours just to do a simple support call," Toner said.

Additionally, thanks to the new service-center model, annual surveys have shown increased customer satisfaction. Toner said the average customer satisfaction rating — based on a scale of 1 to 5, with the latter indicating excellent service — was 4.7 last year.

The restructuring also presented unexpected opportunities. Nebraska IT decided to create a centralized compliance team by combining different agency staff members, such as HIPAA experts from health and human services, IRS 1075 experts from revenue and CJIS experts from the state patrol. This idea has led to enhanced professional development. "Everyone is an expert in their own field," Toner said. "But at the same time, since they're all now together, I've got a person who was an expert on IRS 1075 who now is an expert on HIPAA rules." Toner called this amalgamated group a "SWAT team for audit and compliance response" that is tackling audits more efficiently than ever.

Nebraska IT has enjoyed several other advantages related to consolidation, including improved application management. But greater control comes with greater pressure. If something goes wrong, Toner knows where the blame will go. "You manage everything that happens in the state now, and so there is no finger pointing. ... We know it's us. Or at least our fingerprints are on there somewhere."

Toner, who came to Nebraska IT from the private sector, likened his organization to a private company that must focus on customer satisfaction to avoid going out of business. "It's not much different with a consolidated state,



Nebraska CIO Ed Toner says running a consolidated IT shop like his is like a private company that focuses on customer service to achieve success.

DAVID KIDD

because if they don't think they're getting the level of service they deserve, then this whole thing could fall apart."

As far as the challenge of merging operations and resources is concerned, Toner's perspective again draws on his experience in the private world. To encourage buy-in, he recommends building a strong business case using every piece of available data before proposing any action.

But did he have an easier time of it given the relatively small size of the population, and therefore the state workforce, in Nebraska? He doesn't think so. Bigger agencies tend to be more mature, he said, and get on board more quickly with change.

"They also may be really good at what they do, and so you have to be willing to adopt their standards when their standards are better than yours," he said.

Seattle

When Saad Bashir, former CIO of Ottawa, Ontario, Canada, took over as Seattle's chief technology officer in 2019, he inherited a centralized IT enterprise. There were still small pockets of tech staff in different departments, but all

corporate IT functions rested in one agency for the purposes of consistency, cost control and client experience.

Bashir found, however, that more change was needed. "Although [the city] had made such a huge change three-and-a-half years ago ... organizational change management practices perhaps were not put into place at that time," Bashir said. "And so there were still a lot of what I call small dragons that were not addressed ... there was a sense that we were still a shop of many different smaller IT shops."

One of Bashir's ideas made headlines. In May 2019, Seattle eliminated 14 IT positions, ranging from directors to middle managers. The idea was to remove hierarchies that had developed over time in order to fully unlock the decision-making power of the organization, Bashir said.

But the biggest shift in 2019 was transforming the way Seattle IT was perceived. After hundreds of conversations with both IT staff and clients, Bashir realized his agency was sort of a bottleneck when it came to receiving and acting on client requests. "We had become such a big, insular department. We did not have the pulse of the

organization. We couldn't predict what our clients were looking for," and that, according to Bashir, affected morale.

In response, Seattle IT made various adjustments. It combined similar types of client-facing functions that were previously fragmented across the department, and created governance structures to foster a more participatory environment. It also heavily invested in bolstering its staff's skills — both technical and soft. It overhauled processes to ensure, for example, that tech was being introduced and patched on an appropriate and timely schedule.

Bashir opined that every public-sector entity is facing similar issues, but many shy away from making the tough decisions, either by developing strategic plans or asking for millions of dollars before they do anything.

"I don't believe that it's a question about money or it's a question about having some consultants do a big long-term strategy for us," Bashir said. "We are talking about some really bread-and-butter type stuff, opportunities that we have in front of us."

Mississippi

What kind of IT structure does Mississippi have? From a people and money perspective, IT is decentralized or federated. Each agency has its own IT personnel and its own appropriation for technology. "There is not an omnibus technology bill that would represent the people and the money in terms of the spend," CIO Orgeron said.

When it comes to IT functions, the picture gets more complicated. Orgeron's agency, the Mississippi Department of IT Services (ITS), runs and administers all telecommunications programs, whether they're related to telephony or the Internet, even though state dollars for telecommunications go to the other agencies before finding their way to ITS. His agency also represents the only state data center, with two mainframes and thousands of servers.

Outside of those major examples, individual agencies are doing their own

Kansas City

City IT and police IT in Kansas City, Mo., are merging. As with any similar move, the arguments in favor are straightforward: save money by eliminating duplicative services and roles. But it's perhaps harder than in any other case to convince a law enforcement agency to open up its systems and its processes to non-law enforcement staff. For this reason, it's not a merger that often happens.

Planning for this initiative, known as OneIT, started about five years ago, but city CIO Dave Evans said work on the ground began in 2017, the same year he was promoted from deputy CIO to his current position.

The decision to consolidate the IT departments seemed natural: The police department's data center and the city's data center were already in the same building, and Evans' agency has been assisting police IT for years. The benefits, in terms of cost savings and putting IT governance and operations under the same umbrella, would appear obvious even to an outsider.

What's less apparent to the average eye is the unique challenge of implementing OneIT. Like any IT consolidation, the project has been slow and hard. But to grasp what the process is really like, one must understand the distinct history of the Kansas City Police Department.

KCPD reports to the state of Missouri through a governor-appointed board rather than to the city. State control of the department dates back to the 1930s, when corrupt political boss Tom Pendergast, with his grip on the police, turned Kansas City into "the heartland's decadent home of Jazz Age gambling dens, brothels and all-night taverns," according to the National Museum of Organized Crime and Law Enforcement's website. In response, Missouri passed legislation to take over the compromised police force.

The KCPD's unusual status as a state-run city department has made OneIT "probably one of the toughest mergers of IT services that you could imagine," Evans said. Although the first phase of OneIT, which involved uniting the two data centers, has been finished for a little more than a year, the staff migration phase has proven to be a more difficult component of the plan. "We've migrated staff into their [police IT's] area where it makes sense for the operational areas to be together," Evans indicated. "We've had very little movement the other way. A lot of that is due to, as you can imagine, staff reporting issues and just concerns by staff of possible retirement changes or reporting changes."

Furthermore, Evans said even though city IT staff are certified to deal with criminal justice information systems, police IT employees have been working directly in criminal justice for so long that they perhaps "feel like it is difficult to work with outside agencies."

Completing the staff migration phase carries importance for multiple reasons. First, neither the city nor the police is fully staffed in IT, so combining staff efforts would minimize new hires and better ensure quality services. Second, the city has identified potential savings well beyond the initial expectation of \$6.5 million over five years, but those additional savings will involve utilizing the necessary staff and resources, which will require a higher degree of cooperation between the agencies.

Evans does see light at the end of the tunnel despite the lack of local jurisdiction over KCPD. His team maintains regular communication with the police, and the police chief has expressed many times that he's 100 percent on board with OneIT. For Evans, it's simply a matter of continuing to build relationships with certain individuals on the force who see public safety as their ultimate priority. "It's going to take time for people to feel comfortable with it, to realize it's not a hostile takeover, [that] it's all for the benefit of the city," Evans said.



Illinois' U-Turn

Five years ago, an executive order from former Gov. Bruce Rauner established the Illinois Department of Innovation and Technology (DoIT) to take control of the IT functions of the state's various departments. Kirk Lonbom, then state CIO, faced the gargantuan task of consolidating IT staff scattered across 38 agencies.

Before Lonbom retired in December 2018, he cited many notable accomplishments as part of the state's IT centralization effort. Staff from 10 state agencies had assimilated into DoIT, and employees from 14 more departments were expected to move to DoIT within six months. Illinois saw cost savings of roughly \$70 million through a new data center, a new open data portal and a new data dashboard, he reported.

But in 2019, under the leadership of Gov. J.B. Pritzker and CIO Ron Guerrier, the state made a U-turn of sorts in regard to its IT structure. Guerrier, who came into his role with more than 25 years of private-sector IT experience, halted the staff consolidation process. Instead, he felt a more federated model would put IT staff members in a better position to address agency-specific issues.

"There's no way a centralized DoIT team could meet all the needs of all the agencies, given all their disparate, different and unique challenges," he said. "What I'm asking the team to do is where there's commonality, leverage the commonality, but where it's something very unique to the agency, we'll work as a team to find those unique solutions."

Staff morale seemed to play a significant role in Guerrier's more federated approach as well. He said the stress level of state agency heads took a nosedive after they learned that no more moves to DoIT were planned. And while Guerrier wants to make sure that he can vet particular ideas, he also believes in the idea of sharing power and responsibility.

"I want to make sure [staff] feel empowered to do what they need to do for the betterment of the state," he said. "In my estimation, strategies will die if people are not tied into it."

While CIO Craig Orgeron's IT office runs major systems like telecommunications and the state data center, Mississippi agencies are otherwise responsible for their own tech functions.



DAVID KIDD

thing. "The compute side of the business is not consolidated," Orgeron said. "There is a tremendous amount of infrastructure sprawl across the agencies and that's really a product of the last 15 or 20 years."

In other words, the only way Mississippi could identify the IT infrastructure throughout the state would be by survey. Orgeron candidly said that the state "just doesn't know the answer" about some of its IT tools because of the lack of standardization. "I'm not saying it's good or bad," Orgeron explained. "I'm just saying there isn't any sort of scale to any of those solutions."

Philosophically, Orgeron doesn't believe consolidation is always the right approach. For one thing, consolidation doesn't automatically drive efficiency. For another, Orgeron predicts the commoditization of the cloud through companies like Amazon and Google could change the IT landscape of Mississippi "pretty dramatically and relatively quickly." Something that would take Orgeron's agency three or four days to accomplish could be done in 15 to 20 minutes thanks to "tremendously scalable cloud solutions."

"I see the way we're structured now more as a strength than I have in the past," he said. "Because it allows a centralized IT organization like us to basically build an ecosystem ... which can be consumed, and

it can be built without many, many millions of dollars of capital investment, which can take years to do on the government side."

In other ways, the decentralized aspect of Mississippi's IT structure will continue to pose different challenges. In October 2019, state auditor Shad White released a report indicating that many agencies in Mississippi were "operating like state and federal cybersecurity laws do not apply to them." White's audit came about as part of a 2017 state law that speaks to what departments need to do with cybersecurity while also acknowledging the individual governance of each agency.

Orgeron wasn't surprised by the lack of uniform security standards across the state. "These agencies are like individual organizations or companies," he said. "They're managed differently. They have different skill sets. They're funded differently. So I think what [the audit] teased out is potentially the need for not an intrusion into each agency but a more standard look at what is the baseline for a security program in each agency."

When you're in Orgeron's position, you can't force a mandate on issues like cybersecurity. You have to work within the existing political structure. **It**

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BY NOELLE KNELL, EDITOR

HAIL TO THE CHIEFS

The chief information officer, the chief technology officer, the chief information security officer and even the chief data officer are all fairly common in government in 2020. And other titles like the chief innovation officer and the chief privacy officer, or minor variations of those roles, have been steadily gaining ground for the past several years. But the antennae of news hounds perk up when a city, county or state adds an interesting new job to their payroll — especially one that touches tech. And while many come and go faster than an elected official with a pet project, others end up gathering momentum and entering the mainstream. Here's a look at a few that caught our attention.



CHIEF BICYCLE OFFICER

While the link to tech here is negligible, it's hard to imagine a role more fun to fill than chief bicycle officer. Atlanta started its first recruitment for this job in mid-2015. At the time, Mayor Kasim Reed tied the position to the city's bike-sharing program as well as various safety initiatives, vowing to ramp up the viability of cycling as a commute option for employees.



CHIEF ANALYTICS OFFICER

Closely related to the work of the chief data officer is the chief analytics officer, a role that the state of Wisconsin is currently developing. New York City was perhaps the first in government to introduce the role during the term of former Mayor Michael Bloomberg. The term "analytics" hints at the complex charge analytics officers must face: not just collecting data and posting it on an open portal, but also establishing policies for data sharing and getting to the point where it can be used to solve problems.

CHIEF COMPLIANCE OFFICER

Following government's many rules and regulations generally falls to the chief compliance officer, usually someone with some legal background and an awareness of the applicable rules that govern the business of the public sector. A stronger link to data privacy issues has connected this role to technology in recent years, and some organizations, like San Diego County, have linked the two formally with a chief privacy and compliance officer role. Others, like the state of Idaho, have a chief compliance officer in IT security.

CHIEF PERFORMANCE OFFICER

Under the heading of data-driven government, a growing number of jurisdictions are adding the role of chief performance officer. Connecticut, Denver, Washington, D.C., and Cincinnati, to name a few, have appointed someone with an understanding of technology and data who focuses on overall organizational performance, aligning data to illuminate opportunities for more efficient ways of doing things.





CHIEF CUSTOMER OFFICER

The introduction of the role of the chief customer officer is a sign of the times. Increasingly, government IT staff are trained to focus on their customers, both citizens and their colleagues in government, and ensure they're delivering the best possible service and support. In other words, CIOs need staff with both technical and customer service expertise. The state of Colorado and the U.S. General Services Administration have had chief customer officers for several years.

CHIEF STRATEGY OFFICER

Arizona Chief Strategy Officer Doug Lange works alongside the state CIO and COO, and oversees IT strategy at the enterprise level, developing internal and external partnerships, and leading the state's business engineering group. Colorado Chief Strategy Officer Julia Richman works at the intersection of product management and business architecture, as well as marketing and communications. Illinois and Nashville, Tenn., have both previously had staff with this title, while Hawaii has one now who oversees the state's broadband push.

CHIEF DIGITAL SERVICES OFFICER

San Francisco's Digital Services team is the envy of many cities, and with good reason. Described as a group focused on "improving the city's customer service experience," at its helm is Carrie Bishop, whom San Francisco hired fresh off a stint as director of London-based FutureGov, a private-sector company devoted to helping governments achieve a similar mission. A handful of other jurisdictions, including Boston, now have or have had a chief digital officer (hold the "services") with similar responsibilities.

CHIEF REINVENTION/ TRANSFORMATION OFFICER

We grouped these together as their jobs seem roughly aligned. Kevin Parker in North Dakota appeared at press time to be the country's only chief reinvention officer. Brought on last September to help realize Gov. Doug Burgum's grand vision for a customer-focused government operation, the state equated Parker's role to that of chief digital officer in other government organizations.

Transformation officers have popped up a few times as well, though no one appears to presently hold the role in government. Arkansas and Colorado have hired for this job before, tasked with aligning multiple tech-related efforts to bring about lasting organizational change.



CHIEF KNOWLEDGE OFFICER

Its name alone makes a lot of sense in an era where governments at all levels are unlocking the power of data and analytics to improve the way they do the people's business. The Unified Government of Wyandotte County/Kansas City, Kan., first filled the chief knowledge officer position in 2016, charged with using government-held data to improve interactions with citizens.



BLOCKCHAIN SOLUTION ARCHITECT

A handful of states have started dabbling in blockchain technology, evidenced by the nine that had working groups studying the technology as of late last year. Colorado appears to be the first, however, to hire a blockchain solution architect (not a chief, but an interesting role nonetheless). A piece of enabling legislation passed in 2018 laid the necessary groundwork, identifying the distributed ledger technology as a possible tool to help the state lock down its sensitive data.

CHIEF ALGORITHMS OFFICER

Last November, New York City announced that it would be adding another tech-related position to its payroll, that of chief algorithms officer. The news was sparked by the work of the city's Automated Decision Systems Task Force, responsible for developing policy suggestions to ensure that the city could identify and remove any bias associated with algorithms in city service delivery tools.

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New Rules for Attracting and Retaining Government Talent

Government leaders must partner with employees to help them develop their careers in ways that also support the agency's mission, especially in a tight job market that gives employees plenty of options.

Finding, attracting and retaining talent is a top challenge facing government agencies. Emily Craig, partner for IBM Talent and Transformation, recently shared strategies that government agencies can use to find and cultivate the workforce they need now and prepare for the future.

Focus on the skills, not the job. Today's employees aren't looking for a career built on predictable intervals and promotions. They want a series of growth experiences where they can learn new skills, progress at their own pace and be recognized for their contributions.

That means government leaders must partner with employees to help them develop their careers in ways that also support the agency's mission, especially in a job market that gives employees plenty of options.

"Today, talent is in the driver's seat," says Craig. "If your workers can't put together the kinds of growth experiences they're looking for, they're going to go find them elsewhere."

To attract and retain these workers, agencies should foster a culture of continuous education. Instead of pulling employees into occasional formal training sessions, skills development must be delivered on demand through tools such as online learning portals that let workers acquire new capabilities as needed. These resources also need to include multiple learning options.



“AI combined with natural language processing and quantitative data can provide HR leaders with a list of the most qualified candidates almost instantly.”

— Emily Craig, Partner, IBM Talent and Transformation

“Organizations should recognize that people want to learn in different ways,” says Craig. “A learning portal should contain a variety of resources — videos, written material, simulations, etc. — so employees can use the tools that work best for them.”

Create a great employee experience. According to Gartner, compensation is a leading factor for attracting talent — but it’s not the only factor. Work-life balance and making a real difference in your community also can be powerful motivators. Agencies need to leverage these non-monetary strengths.

“You have a unique mission, a unique culture and a unique proposition for people who want to work at your agency,” says Craig. “The employee experience is about how you bring that to life in everything your employees do over the course of their workday.”

Craig says these tactics can help agency leaders improve the employee experience:

- **Find opportunities for personalization:** For example, when you roll out new employee-facing technology, can you make the new application recognize users and their preferences? Small efforts can help make employees feel closer to an organization.
- **Be inclusive and responsive:** When you’re deploying new technologies or processes, make employees part of the experience by soliciting their ideas and feedback, and then either act on their input or explain to them why you aren’t.
- **Be transparent:** Explain your decision-making criteria to employees and help them understand how workplace

decisions may impact them. “I’ve discovered that when I’m willing to put myself out there and provide employees a level of insight into what I’m doing or thinking as a leader — even if employees don’t like what I have to say — it builds trust,” says Craig.

- **Keep it simple.** When bringing change into the work environment, strive to make the experience as straightforward as possible.

Leverage artificial intelligence. Successful employers increasingly will use artificial intelligence (AI) to assess and manage talent.

“AI combined with natural language processing and quantitative data can provide HR leaders with a list of the most qualified candidates almost instantly,” says Craig. “That accelerates the effectiveness of HR specialists. And think about the benefits to the manager hiring into that position. Using AI we can find the best qualified candidates faster and get them into jobs quicker.”

AI can also help agencies retain talent. For example, it can identify which employees have the skills most critical to the future of the organization and provide predictions on how likely those key employees are to leave the organization. Eventually, leaders might take that one step further and use AI to create recommendations for retaining those crucial employees.

“Maybe a contributing factor is a long commute,” says Craig. “You could offer that employee an extra telecommute day. Or, if you can’t give them a cash bonus, you could offer them extra time off.”

Encourage career mobility. Great employees can be hard to find and even harder to let go. But encouraging career mobility and allowing employees to move into different roles within the organization ultimately can help agencies attract more talent.

“You have to be willing to send talent out to accomplish great things in support of other leaders,” says Craig. “Hopefully that’s within your organization, but maybe that’s outside it or maybe it’s at another public sector agency. Ultimately, you want to be known as a leader that grows and fosters talent that goes out and does great things. That will help you attract new talent.”

This session is part of the IBM Government Cloud Virtual Summit, a free, online event featuring 17 sessions with insightful keynotes, illustrative case studies and deep dives into job-critical topics for government leaders. To view any of these sessions, visit: www.govtech.com/ibmvirtualsummit



Spiraling Out

Government used to have a one-size-fits-all approach to software development, called waterfall. Today, the choices are many — and that's good news.

By Tod Newcombe / Contributing Editor

In July 2019, the Cuyahoga County Council learned that its enterprise resource planning system would take four more months to complete and would cost an additional \$7.7 million. The delay was on top of another 12-month postponement, which meant the IT system for the Ohio county's financial, payroll and HR needs was way behind schedule and 30 percent over budget.

In 2017, Minnesota replaced its aging 1980s legacy DMV system, only to run into problems and end up with a price tag that was double the original cost. Chicago's Office of Budget and Management pulled the plug last year on a new budget software system that did not work. The city has been forced to rely on its legacy system that is no longer supported by a vendor and has limited reporting capabilities.

IT systems fail for a variety of reasons. Sometimes the problem is lack of proper planning. In other cases, it can be scope creep, allowing the project's requirements to change over time, forcing delays and budget increases. But a major cause for IT project trouble is the software development methodology known as "waterfall." Considered the first life-cycle process model for complex IT software projects, waterfall caught on early because of its simplicity. Each phase of the project must be completed before it moves on to the next.

That was important because so much of software development in the early decades of government IT involved one-off, custom-built systems that could include research, new development, prototyping, modification, reuse, re-engineering, maintenance and other activities. Waterfall provided a process for building IT systems that couldn't be bought off-the-shelf, but could contain specific features that were unique to a jurisdiction's requirements.

But what makes waterfall so popular — it's a simple, sequential approach to development — has also proven to be its weakness. Failure to complete a phase

successfully often meant going back and having to start again, which frequently proved to be costly and time consuming. To avoid this scenario, the project team would try to anticipate all situations by setting detailed requirements ahead of time.

As government IT projects grew in complexity, however, this approach became unwieldy. A change in project scope (a common issue in government where new policies and regulations can upend requirements) often led to a surge in alterations for the system. Throughout the 1990s and into the start of the 21st century, the number of large, costly IT systems that failed to operate as promised, or didn't work at all, grew in number. At the same time, government increasingly needed a method to develop new software platforms that could be deployed at a smaller scale and in shorter time frames. Not surprisingly, CIOs and the software vendors who worked in government began to look for a better answer.

“Traditional contracts are hundreds of pages long with explicit instructions on what can and cannot be done. Vendors are expected to just deliver on all requirements, even if they were wrong. There's no room for feedback or response.”

The Iterative Era Arrives

By 2010, the number of failed or failing IT projects in the federal government had become so alarming that the Office of Management and Budget (OMB) began advocating for a software development cycle that could reduce risk while delivering functionality within weeks or months rather than years by developing pieces of the system in smaller chunks.

The process, known as agile, first gained traction in 2001 as the Agile Manifesto, but didn't reach widespread adoption in the public sector until OMB began to demand change. Unlike waterfall, agile

sets deadlines for deliverables in weeks, reducing the scope and risk. The idea is to create software in iterations by dividing up functionality into segments. While initial planning is done at a high level regarding cost, scope and timing, these plans are supplemented by more specific iterations of the project. The status of the effort is evaluated through software demonstrations.

If a requirement isn't addressed in the demonstration, it can be added to the next iteration. This contrasts with traditional project management where progress is assessed based on a review of data and predetermined checkpoints. Another distinguishing factor of agile is its emphasis on collaboration, with self-directed teams consisting of the customer and the developers, resulting in frequent and close interaction.

As agile has matured, new elements have been added to improve how it can be adopted and used to its best advantage in

the government sector. Because agile is so different from waterfall project management, it requires not just a different set of instructions on how to use it, but a new kind of culture, argues Brian Derfer, chief technology officer for Agile Six, a firm that works with government agencies on software development projects.

“In the past five years, government has tried to adopt agile at the surface level, but it hasn't really built an ecosystem to support agile and to help it thrive,” he said.

According to Derfer, an agile ecosystem includes how contracts are structured; how the culture and mindset of participants

need to change in order to support agile; how IT infrastructure and architecture can be more synergistic to agile; and the role of governance and how it is applied.

Contracts have always been a challenge for IT firms that work with government, where lowest bids frequently trump quality. That's been the problem when contractors have tackled IT projects using the waterfall methodology and has carried over to firms that want to use agile.

"Contracts need to be structured to be more outcome-based," said Dan Levenson, chief strategy officer at Agile Six. "Traditional contracts are hundreds of pages long with explicit instructions on what can and cannot be done. Vendors are expected to just deliver on all requirements, even if they were wrong. There's no room for feedback or response."

Contracts that allow for quick iterations let agencies see value earlier in the process, argues Levenson. Iterative contracting also permits agencies to pay at each iteration and can include multiple vendors. There's less likelihood of paying for unneeded labor costs and vendor lock-in, a common problem in government IT projects.

Spiral Brings Iterative to Complex Projects

Agile, while innovative and more flexible than the waterfall methodology, isn't the perfect solution for every IT software project. Another development life-cycle model called spiral has emerged as a favorite among software engineers involved in large, expensive and complicated projects. Spiral's advantage, according to its advocates, is how it manages risk in a project. Spiral gets its name from the coiled diagram of an iterative, spiral development process created by Barry Boehm, who came up with the concept in 1986.

The general idea behind spiral is that "choices based on a project's risks generate an appropriate process model for the project. Thus, the incremental, waterfall, prototyping and other process models are special cases of the spiral model that fit the risk patterns of certain projects," according to Wikipedia.

The advantages of spiral include its flexibility to allow for changes after development has started; how it takes risk into

The advantages of spiral include its flexibility to allow for changes after development has started; how it takes risk into consideration in each phase of development, reducing the chance of failure; and customer satisfaction, thanks to its feedback loop, which allows for demonstrations and evaluations by the customer during each phase of the development.

consideration in each phase of development, reducing the chance of failure; and customer satisfaction, thanks to its feedback loop, which allows for demonstrations and evaluations by the customer during each phase of the development.

Not surprisingly, spiral has been adopted by federal agencies, most notably the Department of Defense and NASA. As far back as 1999, a contractor used spiral to modernize the Army's logistics system by introducing IT products as they became available. In 2003, the Army used spiral again to develop a massive \$14.9 billion system for its Future Combat program, in which each phase was tested and built little by little.

NASA evaluated spiral and pointed out that the model contains elements of waterfall and iterative, with each phase of the project having to spiral through a set of risk assessments, requirements analysis, design, coding, testing and evaluation. Each pass through the "spiral" allows developers and customers to assess risk and lessons learned before moving on to the next phase.

In a report published in 2004, NASA concluded that spiral, while more expensive to use when compared to other development models, provided a better-quality product that meets the user's needs by allowing requirements to evolve and by providing functionality at each phase of the development.

Agility at the Enterprise Level

If spiral doesn't sound like the right fit, a growing number of government agencies

are trying out scaled agile framework (SAFe) as a means of applying agile methodologies, along with their specific advantages, to large, complex IT software development projects. While it can help teams of developers and customers align their goals around a project, SAFe is designed to take that to the enterprise level, driving alignment across an organization.

The Centers for Medicare and Medicaid Services (CMS) has been using SAFe with several partners and teams of workers to modernize a series of programs involving data analysis, financial payments and oversight, according to Abisoye Ajibade, a deputy platform manager and agile coach at NewWave, a health IT firm.

What's critical to success, said Ajibade, is having all the participants on the same page. Traditional agile isn't so effective at bringing everybody together to deliver their input to the project at the right time. SAFe increases engagement, not only at the team level, but also at the program and portfolio levels.

"There's a lot of complexity to what we are doing," said Ajibade. "I have oversight across six different contractors, each with its own culture and way of doing things. SAFe allows us to plan on the commitment and delivery; we can make sure that everyone who is responsible for executing their job is aware of what others are doing that will impact how the product is delivered and tested before it gets pushed out."

Even with the advances to software development that agile, spiral and SAFe bring to the government IT workplace, challenges remain on just how effective and successful individual projects will turn out. Using a relatively new software development model at CMS, with its administration and oversight of the country's two largest health-care systems, can be quite daunting, even with the best resources. Ajibade said coordination and execution can be difficult at times.

Still, the demand for flexible, iterative development models continues to grow as technology becomes the DNA of how government operates. With more options on how to deliver the right technological solution within budgets and on time, government can breathe a sigh of relief. 

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Hacking the System

To keep driving technology forward, we must not lose the curiosity and sense of humor that inspired previous generations.

Use the word “hack” advisedly in this column. It sets off alarms for *GT* Staff Writer Lucas Ropek and columnist Dan Lohrmann, who think in terms of white, gray and black hats in their coverage of cybersecurity. And the word’s use here should not be confused with a life hack, that broad basket of shortcuts and novel productivity tricks some people use to get through an average workday.

There are other variations on this theme, often combining playful ingenuity and applied innovation. Consider Steve Jobs and Steve Wozniak before Apple during their phone phreaking phase — hacking into telecommunications systems, especially to obtain free calls — in the early 1970s.

Wozniak is credited with designing the first digital blue box, an electronic device that generates the same tones employed by a telephone operator’s dialing console to switch long-distance calls, allowing the user to make free calls illegally. Wozniak used his Blue Box to satisfy his curiosity about how telephone networks worked. He gleefully concedes that the Blue Boxes made a great platform for pranks, which he employed liberally at the time. For his part, Jobs saw a business opportunity and sold them dorm room to dorm room. For the engineer and the marketer, it was the precursor to a breakthrough in the computer industry.

A half-century later, the legal cost of long distance has been driven to zero. Blue Boxes are now museum

pieces. But phreaking is more than a footnote to history, because what we cannot afford to lose is the curiosity to explore, to disrupt and, in the spirit of Woz and his fellow phreaks, to prank.

Take a couple of recent examples.

Exhibit A: The Smart Potato, spotted at the Consumer Electronics Show (CES) in Las Vegas with tech components imported from France by inventor and entrepreneur Nicholas Baldeck. Built off the back of a classic Idaho russet potato, Baldeck integrated an antenna he calls the Neuraspuud that, along with a companion smartphone app, uses artificial intelligence to tap the superior decision-making powers of the potato. If it sounds like a Woz-worthy prank, here’s your prize: Baldeck’s point is that much of today’s ballyhooed tech doesn’t do anything useful, or anything at all. But if his product’s Indiegogo campaign — which had reached \$5,831 at the time of this writing — cracks six figures by the time it closes, Baldeck says the second release will be Potato Blockchain.

Exhibit B: The Google Maps Hack project looked innocent enough. Picture a small red wagon pulled down an otherwise empty Berlin street by an artist named Simon Weckert. The artist had packed the wagon full of 99 borrowed smartphones. From the sidewalk, it looked benign. But as Weckert pulled

the phone-laden wagon up and down random streets, the distinctive red lines signifying massive traffic jams emerged on Google Maps. There was latency, but slowly and surely, the wagon and its digital payload tricked Google Maps. The company concedes its algorithms cannot yet filter for a red wagon full of phones.

Are these modern hacks completely benign? Perhaps not. If they are not, it is because the larger environment is more toxic than it was when Wozniak and company were pranking in the early ’70s. But Woz’s characteristic curiosity, creativity and inventiveness become all the more important as the problems we face become more complex, the landscape becomes more crowded and the common expectation too easily defaults to “there’s an app for that.”

Weckert reminds us that his wagon and phone experiment was about more than having a little fun at Google’s expense. Paraphrasing media philosopher Marshall McLuhan, we shape our tools and thereafter our tools shape us. Weckert says, “I have the feeling right now that technology is not adapting to us, it’s the other way around.” 

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



Where Next for Smart Cities?

Now that the initial hype around smart cities has started to fade, leaders must examine how to use those technologies to do the most good.

The way that government technology is contemplated, procured and ultimately implemented is experiencing a shift. Many predictions are swirling about the future of smart city initiatives and projects. Some industry leaders have gone as far as to declare the partial death of the smart city movement. While many government IT managers have fully embraced and championed the smart city cause, others have chosen a more measured and cautious approach.

Multiple state chief information officers have spoken publicly about getting “back to basics” and taking a slower approach to move further ahead over the longer term. Blockchain, 5G and augmented reality are amazing technologies but are not transforming lives — at least not just yet. Many technology leaders have openly or privately pondered whether the smart city movement has resulted in too much smart city hysteria. The smart city moniker can mean different things to different people, especially our citizens. Even the term “smart city” inadvertently makes

it sound like all innovation originates from cities. States, counties and other special agencies are often ground zero for innovation and new approaches.

Several other factors have slowed smart city initiatives. Procurement remains a formidable barrier, as technology budgets are tight

and purchasing processes are antiquated. Most IT shops are underfunded and have limited staffing. These teams are also grappling with increasing cybersecurity threats, which show no signs of slowing down. Presidential primary and general elections and heightened geopolitical tensions make for challenging times. CIOs, CISOs and other leaders are funneling any disposable time, money and talent into improving their security posture, leaving less bandwidth for smart city efforts.

Many CIOs and IT directors have cooled to the smart city arms race in favor of a more measured and practical approach. Cutting edge over bleeding edge. Inclusion over hype. Less jargon and fewer buzzwords. User-centered design has taken center stage in cities like Chicago and Indianapolis. A new focus on the nuts-and-bolts citizen issues like paying bills, customer service and digital engagement. Smart city “FOMO” (fear of missing out) has affected not only the technology staff, but also elected officials, city and county managers, and other stakeholders.

As CIOs, some of our partners and vendors have contributed to the smart city FOMO. Often well-intentioned, certain groups have bombarded us with the latest and greatest smart city widget or service. Many of these products have

been around for a while or used in other industries. The smart city label was added to these products and services to create a sense of urgency. Specific ideas have stood the test of time over the past decade. Other approaches have appropriately fallen by the digital wayside.

Smart city technology isn’t very smart if it doesn’t cater to the vast majority of our residents. We’ve witnessed this

transformation with the open data movement. The earliest launches of open data portals typically were massive dumps of raw data. The portals were treasure troves for data geeks, but didn’t do much for 95 percent of citizens. The new generation of open data portals offers

better user interfaces, videos, narratives and, most importantly, context.

The smartest cities (and others) are making decisions based on data, evidence and insights. The most intelligent cities are breaking down silos through cross-collaboration, automation and APIs. These cities are putting the citizen experience first with a focus on those with the greatest need. The most strategic IT leaders have an eye on the future with each hardware and software decision. We need to pave the way to allow maximum flexibility and compatibility as future smart city projects become more affordable and practical. Our stakeholders and taxpayers expect and demand no less. **91**

“Smart city technology isn’t very smart if it doesn’t cater to the vast majority of our residents.”

Luke Stowe is the CIO and interim director of administrative services for Evanston, Ill. One of *Government Technology’s* Top 25 Doers, Dreamers and Drivers of 2018, he works to bridge the gap between technology and business practices.

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▲ Fold Out

Lenovo's ThinkPad X1 Fold is a fully functional PC with a folding OLED display that opens to a fully flat 13.3-inch display. The X1 Fold weighs less than 2.2 pounds, is built from lightweight alloys and carbon fiber, and is enclosed in a leather folio cover. In landscape mode, with the built-in kickstand, users can review and annotate a presentation or use the Bluetooth Mini Fold Keyboard. When closed, the keyboard stores and wirelessly charges inside the system and is secured with magnets. In its laptop orientation, users can use two independent displays during certain multitasking activities. Join a video call on the upper screen while reviewing and editing a presentation on the lower screen. Compare documents, one above the other, or take notes on one screen while watching a lecture on the other. www.lenovo.com



◀ Carry All

The Yeti Crossroads backpack 23 is designed with separate laptop and tablet pockets that are lined with shock-absorbing foam for protection. The pack fits a 15.5-inch laptop, and there's a spacious top pocket for accessories. The bag's "structure arc" keeps it upright and open wide for ease in packing and unpacking. The shoulder straps offer custom shape with dual-density foam for comfort, and the articulated back panel provides a comfortable fit that adjusts to the user's shape. There are also two exterior bottle pockets that stay collapsed with magnets when not in use. www.yeti.com

▼ See Clearly

The Dell UltraSharp 27 4K USB-C monitor (U2720Q) offers true color reproduction with wide color coverage, including 99 percent sRGB, 99 percent Rec. 709 and 95 percent DCI-P3. The monitor is designed to give color gradient and precision in more shades, with a color depth of 1.07 billion colors and high contrast ratio of 1300:1. The 27-inch monitor provides high detail with 4K UHD (3840 x 2160) resolution and a high pixel density of 163 ppi — four times more details than Full HD. The single-cable USB-C delivers up to 90 watts of power while transmitting data and video signals. www.dell.com



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Alabama CISO Leaves for Health System

After two-and-a-half years in the post, Alabama Chief Information Security Officer **Ryan Allen** left state work in mid-December to take the role of CISO for the University of Alabama Health System. As of press time, a replacement had not been named.

New Privacy Officer Named in Washington

Katy Ruckle was named by CIO and Director of Washington Technology Solutions Jim Weaver to serve as the state's chief privacy officer. She previously served as privacy officer and information governance administrator for the Washington Department of Social and Health Services.

Kansas City Innovation Officer Departs

In office since May 2019, Kansas City, Mo., Chief Innovation Officer **Alex Braszko** announced his departure at the end of the year. Braszko took over from Bob Bennett in the last month of Mayor Sly James' tenure and continued under Mayor Quinton Lucas. Notably, the city's innovation office has been replaced with an Emerging Technology Board.

Montgomery County, Md., Names New IT Director

Gail Roper announced in January that she was hired to be director of the Montgomery County, Md., Department of Technology Services. This marks a return to public-sector work for Roper, who was most recently director of National Initiatives for Smart Cities at the Knight Foundation, but previously served as CIO of Raleigh, N.C., and Austin, Texas. She succeeds longtime Montgomery County IT director **Sonny Segal**.



San Jose Innovation Officer Heads to Startup

Chief Innovation Officer and head of San Jose Mayor Sam Liccardo's Office of Innovation and Technology **Shireen Santosham** announced her departure from city service in January. With San Jose since 2018, Santosham spearheaded the city's Smart City Vision initiative to foster equity and social justice. She will take a role with the Bay Area vertical farming startup Plenty. **Dolan Beckel**, previously San Jose's civic innovation and smart cities lead, is the new chief innovation officer.



Clark County, Nev., Promotes Deputy CIO

In December, Clark County, Nev., appointed **Nadia Hansen**, previously deputy CIO since August 2018, to the county's top IT post. She took over from Michael Lane, who stepped down last May.

Interim CIO Appointed in Indiana

Following Dewand Neely's departure, the Indiana Office of Technology's (IOT) Chief Administrative Officer **Robert Paglia** has been appointed interim state CIO. Paglia has been with IOT for more than 16 years.

Minnesota Security Chief Steps Down

Aaron Call, who had served as Minnesota CISO for about two years, left state service in late December for a security position with WPS Health Solutions in Wisconsin. In Call's time with Minnesota, he helped create a statewide security operations center. **Rohit Tandon** has been named to the role in an interim capacity.

35-Year State Veteran Retires from New York CISO Post

Chief Information Security Officer **Deborah Snyder** left the New York State Office of Information Technology Services in November. She began working for the state in 1985 with the Department of Social Services, and later led cybersecurity for the Office of Temporary and Disability Assistance. **Karen Sorady** is serving as acting CISO.

Pettit Heads to Colorado

Colorado has tapped state IT veteran **Alex Pettit** to serve as chief technology officer, a role previously held by **David McCurdy**. Pettit has served as CIO of both Oregon and Oklahoma, and was most recently a project management consultant with TEKsystems.



Dallas CIO Departs

Hugh Miller left the Dallas Information and Technology Services department in January. He had served as CIO since 2018, and was previously CIO and CTO in San Antonio from 2004 to 2016. **Gloria Lopez Carter** was named his replacement in an interim capacity.

Permanent CISO Named in Vermont

After serving as interim chief information security officer since last August, **Scott Carbee** was named to the position permanently in January. Carbee has been with the state Agency of Digital Services for two years and formerly worked in cybersecurity for the Vermont National Guard.

Missouri Appoints New CIO

Following Mike Cheles' retirement at the end of 2019, Missouri named **Jeffrey Wann** to head the state's Information Technology Services Division. Wann's experience includes 14 years in private-sector IT, and time as CTO of the Federal Reserve and head of infrastructure and business systems modernization for the IRS.

New Director of IT Named in Henderson, Nev.

After the Henderson, Nev., chief information officer position was renamed the director of IT, **Alyssa Rodriguez** took over the post. The office had been vacant since long-time tech chief Laura Fucci retired in May. Rodriguez has been with the city for nine years.

Oklahoma Governor Appoints New OMES Director

Gov. Kevin Stitt promoted **Steven Harpe** from deputy to director of the Oklahoma Office of Management and Enterprise Services, the agency that oversees IT, as well as finance, property and human resources for the state. CIO Bo Reese reports to the OMES director. Former Director John Budd will continue to serve as chief operating officer.

Santa Clara County CIO Returns to Private Sector

Ann Dunkin left her post in February as CIO in Santa Clara County, Calif., for Dell, in “a strategy role related to state and local government.” Dunkin spent three years with the county, and was previously CIO for the Environmental Protection Agency. As of press time, the position had not been filled.



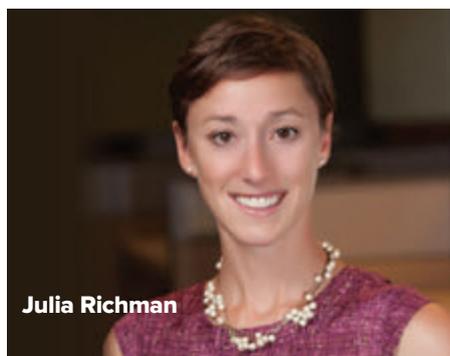
Joy Bonaguro



Krista Canellakis

California Makes Key Tech Appointments

Gov. Gavin Newsom in January named **Joy Bonaguro** as California’s new chief data officer. Bonaguro served in the same role in San Francisco from 2014 to 2018, and has since worked as head of systems and data for Corelight Inc. As part of the same announcement, former San Francisco Chief Innovation Officer **Krista Canellakis** was appointed as deputy secretary, general services, for the state. Both positions are part of the California Government Operations Agency.



Julia Richman

Colorado Names Chief Strategy Officer

Julia Richman, previously chief innovation and analytics officer for Boulder, Colo., was named the state’s chief strategy officer in February. CIO Theresa Szczurek said Richman’s experience “will be instrumental in developing and evolving a strategic framework that delivers customer delight.”

Eric Boyette



Eric Boyette Leaves N.C. IT for DOT

Gov. Roy Cooper named state CIO **Eric Boyette** to head the North Carolina Department of Transportation in light of the previous DOT secretary’s retirement. Before his 2017 appointment at the Department of Information Technology (DIT), Boyette spent 22 years with the transit agency. **Tracy Doaks**, DIT deputy CIO, was named Boyette’s successor.

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WW 1,601

That's the number of bots working behind the scenes to keep Wikipedia working as well and as accurately as it can. According to a study from the Stevens Institute of Technology in Hoboken, N.J., the bots account for about 10 percent of all activity on the online, crowdsourced encyclopedia, performing tasks like identifying vandalism, creating redirect links and sending user notifications.

SOURCE: DIGITAL TRENDS

SPOT THE DIFFERENCE:

As deepfakes become more of an issue in media, Jigsaw, an Alphabet subsidiary, has developed a tool to help journalists more easily identify manipulated images. Called Assembler, the tool has "detectors" that analyze an image and decide if it's the real deal, looking for things like one image pasted over another; if it's a fake, Assembler lets the user know and points out where the image may be a fraud. Jigsaw doesn't plan to make the tool publicly available.

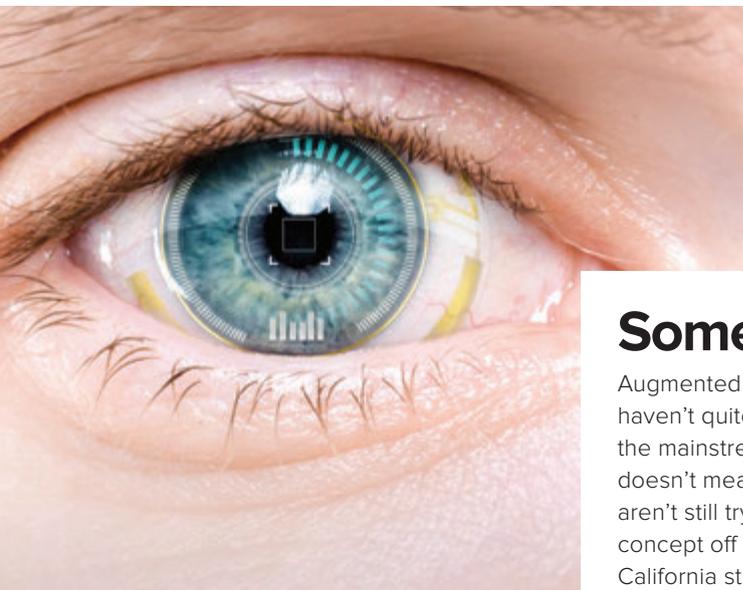
SOURCE: THE VERGE



\$887K



When Microsoft announced it would no longer be updating or supporting Windows 7 as of Jan. 14, 2020, users had a year to upgrade to operating systems that would have available patches going forward. But Germany missed the deadline, a newspaper there reported, and as of Jan. 22, the federal government was still running Windows 7 on more than 33,000 computers. Microsoft gave Germany an \$887,000 bill to extend security updates for the next year. SOURCE: ENGADGET



Something in Your Eye?

Augmented reality headsets haven't quite caught on in the mainstream, but that doesn't mean companies aren't still trying to get the concept off the ground. California startup Mojo

Vision is working on a prototype for an AR contact lens that superimposes graphics and text over the wearer's vision at more than 14,000 pixels per square inch. Mojo envisions the

lenses being used to read text messages or get turn-by-turn driving directions, and they could be customized with the user's regular contact prescription.

SOURCE: NEW ATLAS

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