STATE AND LOCAL TECHNOLOGY

WHAT YOU NEED TO KNOW
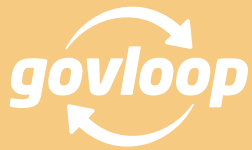
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EXECUTIVE SUMMARY ———

State and local governments increasingly rely on information technology to achieve their missions of serving constituents. But it's not just the tech itself that agencies need to move forward in a digital era. They also need skilled professionals to manage and secure new tools, as well as effective procurement policies to quickly acquire and deploy new systems.

In this guide, we take a deep dive into the key IT priorities for state and local governments. This guide focuses on nine trends we're seeing in three distinct areas of IT optimization and modernization: people, procurement and technology. Specifically, we'll discuss:

- Innovative recruitment efforts to attract IT talent
- Ways to increase diversity in technology staff
- Training programs to supplement internal skills
- Shared services agreements between municipalities
- Risk-based acquisitions to increase cybersecurity
- Public-private partnerships to pool resources
- Cloud computing's growth in state and local government
- Consolidation efforts to increase efficiencies
- Digital services' role in the next wave of government customer service

For each trend, we'll discuss the challenges and rationales that are pushing agencies to adopt these new tools and methods. We'll also offer a case study of each trend in action and provide resources to help other state and local organizations get started.

Innovation is taking place at every level of government. This guide helps you understand what that innovation looks like at the state and local levels.

#1 INNOVATIVE RECRUITMENT

86%

of states said they're having trouble recruiting people to fill vacant IT staff slots

63%

of IT professionals don't believe their organizations have enough cybersecurity staff

93%

of state CIOs said they need more cybersecurity workers

State and local governments increasingly relying on information technology to serve citizens, maintain internal operations and keep pace with private-sector information. That means it's more important than ever for agencies to have skilled professionals to deploy, maintain, secure and update those systems.

Unfortunately, many public-sector organizations find it difficult to recruit the people they need. Not only is there a lack of skilled IT professionals in the workforce; government agencies also have to compete for that limited talent pool with companies that can often offer higher salaries and better benefits.

That's why many state and local governments are exploring unique ways to recruit IT talent. For many agencies, that means finding ways to reach young people before they enter the workforce – both to encourage an interest in computer science and highlight the appeal of public service. For other agencies, IT recruitment means offering alternative career paths to enter STEM fields from within government.
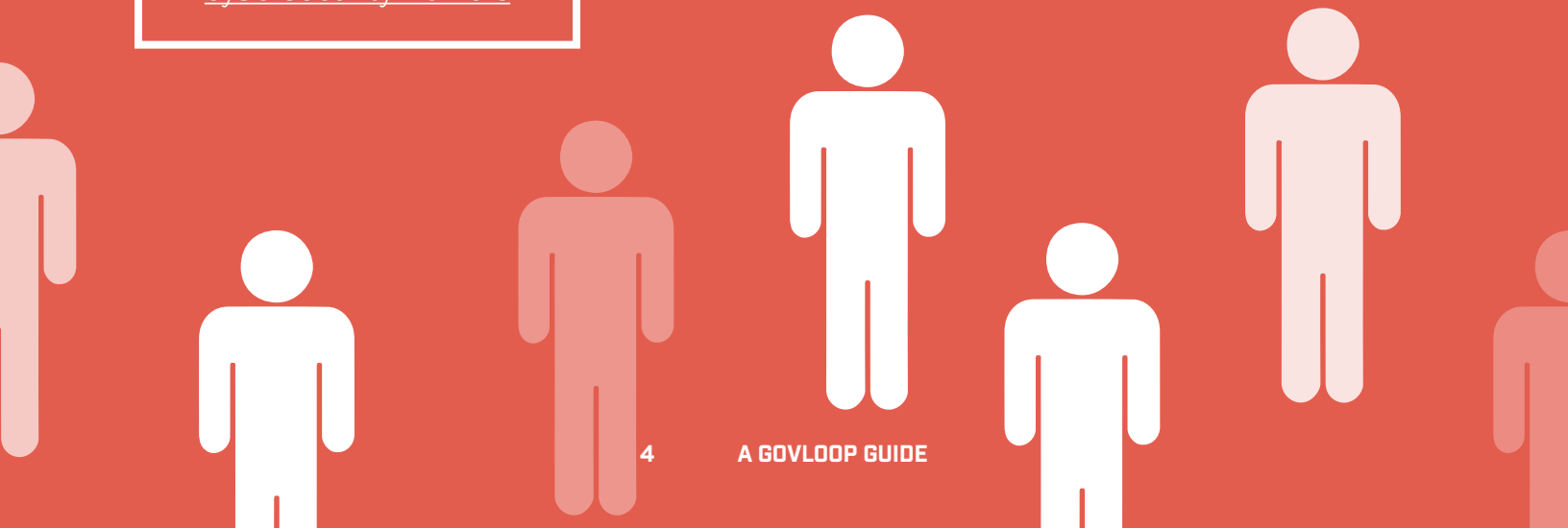
CASE STUDY: HAWAII OFFERS A CYBERSTART

In partnership with the SANS Institute, Hawaii launched a free, online cybersecurity program in the summer of 2017. The goal of the program, called CyberStart, is to engage high school and college students in cybersecurity before they enter their careers.

"CyberStart is an innovative opportunity for Hawaii students to test and develop skills applicable to careers in high-demand IT security … Exploration of this exciting career path can now continue with CyberStart."

After a test version was launched in July 2017, the program went live in August. Over 28 days, CyberStart allowed users to work through a series of games and challenges related to cybersecurity. Their "mission" to protect a hypothetical mission base uses gamification to engage users in 31 levels of cyber education and practice.

Students who excel in the program are eligible to share in $150,000 in scholarships for further cyber education, and ultimately for $500,000 in scholarships for college and graduate-level training in preparation for highly sought-after industry certifications.

WORDS TO KNOW

TIME TO HIRE
The length of time between initial engagement of a candidate and their signing of a final offer letter or commitment

TIME TO FILL
The length of time between posting a vacancy and having a successful candidate begin work within the agency

QUALIFIED CANDIDATES PER HIRE
The number of applicants who successfully move past the first phase of candidate screening, versus the number who initially applied

RESOURCES

Workforce Self-Assessment Questions for Agency Leadership

A worksheet to help administrators plan for future staffing needs

Career One Stop Toolkit

A Department of Labor website that offers multiple online tools for recruiting, hiring and training across occupations and organizations

8 Hot IT Hiring Trends – and 8 Going Cold

A quick rundown of some of the perks and benefits organizations are successfully using to recruit IT staff

#2 INCREASING DIVERSITY

10

states have provisions or policies that facilitate the hiring of people with disabilities in state government

8

or more U.S. cities added the position of Chief Diversity Officer to their local governments since 2015

25%

of the 7,383 state legislators in the United States are women. Women of color comprise 6 percent

State and local governments that house a diversity of experience often generate better outcomes for states, cities and constituents. Unfortunately, certain groups are historically underrepresented.

State and local agencies often see discrepancies in the diversity of applicants and employees due to an underwhelming level of interest in public administration and minimal outreach efforts on the part of municipal governments. Additionally, leadership may have a fear of changing hiring processes and disinterest in diversifying agencies. The lack of current diversity in state and local governments, however, also serves as a deterrent to potential minority applicants, creating a cycle of underrepresentation, especially in leadership and higher-paying positions.

Due to these inequities, many state and local governments are looking for ways to increase diversity. Some actions include hiring a Diversity Officer or Affirmative Action Administrator to increase the active recruitment of poorly represented groups. Many states are considering the creation of new Equal Opportunity Guidelines and trainings to increase the level of cultural sensitivity within agencies, which could encourage women, racial minorities and people with disabilities to pursue government positions.

CASE STUDY: LOS ANGELES TAKES ACTIONS TO INCREASE DIVERSITY

Like most other organizations, city governments often lack gender diversity in STEM fields. In 2014, Los Angeles' Information Technology Agency (ITA) was no exception. At the time, zero percent of ITA's executives, 40 percent of its managers and 38 percent of its programmers were female.

The city CIO, Ted Ross, also had another problem. Nearly half of his staff was eligible to retire in the next few years. But he turned one problem into an opportunity, and used the looming staff shortage as a driving force to increase gender diversity.

Ross started by informally gathering information through conversations with internal female IT employees, as well as local and national leaders promoting women in technology fields. Then, Ross set a target to have 50 percent women in IT management in two years. Part of that goal meant looking internally for female talent that could be fostered and promoted.

The department also looked outward to achieve that goal. Ross launched concerted outreach efforts – speaking at public forums that supported women in technology and using social media to recruit female interns. The department also launched leadership training seminars that both targeted women, and pushed for female representation on technology panels.

By 2016, 60 percent of ITA executives were women, as well as 54 percent of managers.

WORDS TO KNOW

REPRESENTATION METRICS
The method of measuring internal diversity by comparing the representation of a particular group within an organization to an external benchmark

CULTURAL COMPETENCE
Knowledge, awareness and appreciation of dissimilarities that allow agency employees to increase their sensitivity and responsiveness to cultural differences between organization employees and citizens

ACCESSIBLE DESIGN
The extent to which the design of an organization's environment is manageable for people with disabilities

RESOURCES

Are There Benefits to Diversity and Inclusion?

An explanation of the benefits of diversity for any organization

Best Practices in Achieving Workforce Diversity

Results from a study from the Department of Commerce with pro tips for improving diversity in an organization

Current Numbers on Women in Politics

More statistics on the state of racial and gender diversity in state and local legislatures

#3 TRAINING FOR IT SKILLS

38%

of government employees say their organization doesn't provide adequate resources for security training

100%

of surveyed government IT workers said employees were the biggest cyberrisk

7 MILLION

open jobs required some level of coding skills in 2015

For many state and local governments, beefing up their IT workforce will require more than recruiting staff and volunteers to support technical goals. There simply aren't enough trained personnel to fill vacant slots. Plus, many smaller agencies lack the budgets and resources required to compete with the private sector's recruitment efforts.

That's why more state and local agencies are investing in training as a way to better manage and safeguard their IT. The goal of IT training is twofold.

First, it helps protect agencies from systems misuse – a major cybersecurity issue for most organizations. Internal training on technology and cybersecurity practices can help employees better use systems, thereby decreasing the burden on trained IT staff and reducing the risk of a cyber incident.

Internal training on IT best practices, however, will not completely eliminate the need for skilled professionals. That's why many state governments, including Virginia and Illinois, are creating programs to train constituents in technical fields, including IT and cyber.

CASE STUDY: VIRGINIA TRAINS VETS IN CYBERSECURITY

Virginia estimates that it has around 17,000 vacant cybersecurity jobs in the state. To help fill that gap, officials are looking at former government employees – specifically, veterans. But rather than recruiting veterans who are already skilled in IT, the state launched an effort to train a new cohort of cyber professionals.

Cyber Vets Virginia launched in 2016 to provide free cybersecurity training to veterans, National Guard, Reservists and military spouses. The 12- to 15-week training is offered online, in partnership with several industry cybersecurity partners. It covers topics including security infrastructure, software engineering, network security and more.

At the end of the training, successful students are offered further career resources, as well as access to specific job opportunities in the IT field. They are also encouraged to pursue certifications beyond program completion, which program managers help students navigate. So far, two cohorts have completed the program – with the second cohort registering about 80 students.

WORDS TO KNOW

E-LEARNING
Non-classroom-based education programs that leverage software and/or the internet to provide training materials and assessments

LEARNING MANAGEMENT SYSTEM (LMS)
A software application or web-based technology used to plan, implement and assess a specific learning process; usually virtually

INDIVIDUAL DEVELOPMENT PLAN (IDP)
A tool commonly used in government to assist employees in outlining career and personal development goals, as well as steps to meet those objectives

RESOURCES

Top Training Resources to Meet Government's In-Demand Skills

A guide to help find the right training to enhance internal IT skills

Virtual Learning in Government: Breaking Down What You Need to Know

A pocket guide describing the uses of learning management systems in the public sector

2017 Security Awareness Report

Recommendations from the SANS Institute to help organizations determine the best ways to increase cybersecurity and IT awareness among employees

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THE ROLE OF WORKFORCE MANAGEMENT IN AGENCY MISSIONS

An interview with Rock Regan, Industry Marketing Director for Public Sector at Kronos

Engagement is a hot topic in state and local government. However, most public-sector efforts target constituents. After all, citizen engagement is crucial for agencies to meet their missions of connecting with and serving the public.

In a recent interview with GovLoop, however, Rock Regan, Industry Marketing Director for the Public Sector at Kronos, explained why it's equally important for agencies and their missions to ensure they're engaging their own employees. Kronos provides digital workforce management solutions for government agencies at all levels.

Employee engagement can have a direct impact on agency operations, Regan said. "One of the bigger reasons to pursue employee engagement is that employees who are engaged and happy do a better job, with less sick time and a greater focus on customer service," he said. "Governments are really trying to up their service game, and having engaged employees is really important to providing better services for the public."

Engagement is also a tool to help curb workforce shortages. "Governments more than ever are in competition for talent," Regan added. "As we look toward the next generation of millennials, employee engagement is really a key metric in attracting and then retaining those employees."

Increasingly, Regan said agencies are coming to embrace the connection between employee engagement and organizational performance. He also explained, however, that many agencies find it difficult to create an engaged culture because they are tied to manual workforce management processes that can be frustrating and slow for employees to use. Legacy systems are a common barrier to everyday government operations, but it's easy to overlook how outdated processes can also directly impact frontline employees.

Manual processes for scheduling staff, monitoring performance, and tracking benefits not only put agencies at risk of violating labor regulations, they also place significant burden on employees and managers who have to use outdated processes to get their jobs done. At the same time, these processes are often inefficient, leading to diminished performance and excess resources dedicated to labor management.

In contrast, Regan said the key to engaging employees is making them feel empowered to take ownership of their own workloads and schedules. That can only be achieved by giving them the right tools, consolidated in a single, easy-to-use workforce management platform.

With a platform like Kronos' workforce management suite, staff can track their own hours, manage their own schedules and submit requests for any additional assistance from a single location. That makes it easier for employees to craft the workday that keeps them engaged and lets them complete their tasks. They also don't have to worry about manually tracking their own paid time off, family or parental leave or other benefits. And with less time spent on administrative tasks, staff can focus their efforts on furthering the organization's mission.

In addition to fostering engagement, workforce management tools can directly influence agency operations. Consolidating all labor data in a single place gives managers greater transparency into their team's operations and performance and allows them to adjust as needed to ensure a consistent level of performance. Plus, agencies don't run the risk of falling out of compliance with labor laws, union regulations or other policies related to workforce management because they can consistently monitor compliance.

Finally, effective workforce management can help agencies cut costs. With a central management solution, leaders can make better, data-driven decisions about how labor dollars are allocated and spent. "The largest expense that virtually all governments have is their workforce," Regan said. "But it's also the largest controllable expense, so it's critical to have a system that specializes in managing any data that contributes to managing that workforce expense."

For example, a large labor expense at many agencies is overtime pay. Kronos' management platform can give managers a real-time view of all employees' hours so that they can make a data-driven decision about who to schedule for upcoming work and still avoid overtime pay.

Workforce management is a critical component to every agency's operations, but it requires a digital platform to truly optimize labor and engage employees. "The tools and the technology are now here to help agencies be accountable and transparent with their employees," Regan concluded. "That's what we focus on at Kronos. We allow employees and their managers to build the best workday to let them get their jobs done."

NASCIO'S TAKE ON STATE PROCUREMENT
A Q&A with Meredith Ward, Senior Policy Analyst at NASCIO

The National Association of State Chief Information Officers (NASCIO) recently partnered with the National Association of State Procurement Officers (NASPO) to create a State IT Procurement Negotiations roadmap. GovLoop sat down with Meredith Ward, Senior Policy Analyst at NASCIO, to hear what they learned from that process.

What NASCIO discovered was that the collaborative approach taken by both organizations to create the report was the same approach that individual CIOs and CPOs should take to increase the efficacy of procurement today. Effective acquisition requires CIOs, CPOs and private-sector partners working in concert to ensure security and scalability needs are met. Ward shared her insights in this interview.

How would you characterize the current state of IT acquisition in state and local government?

There's a constant challenge, because technology moves at the speed of light. One of my CIOs famously said, "Technology right now is the slowest that it will ever be in our lifetime." That's really key to the procurement process as well. Gone are the days where the 200- to 300-page RFP and the 18-month procurement cycle are realistic. Technology moves a lot more quickly than that.

I would characterize the state of IT procurement acquisition in states as constantly adapting. That's not just the way that things are done, but also how the business of the states is run.

We're seeing a lot more outsourcing. Now, a CIO is more of a broker of services. For example, states aren't running their own data centers as much as they were 20 years ago. A lot of states are outsourcing some of those functions. And so, in order to figure out what the best solution is for a state, procurement has to be involved. Together, CIOs and CPOs can learn how to be adaptive to the pace of technology and how things are changing.

Are you seeing states leverage shared services to do that?

In our 2017 CIO Survey, we asked that question about managed services and shared services. And I can tell you that that is the direction that most states are going. This was not as common 10 or 20 years ago. Again, this goes back to the CIO becoming more of a broker of services.

What is challenging states to achieve that and other procurement goals?

The obvious thing is that the procurement system in states was set up to procure goods. It was not really set up to procure services. Especially when you're talking about cloud services, there are a lot of misconceptions about what that means. It's one thing for the CIO to understand what it means to be "in the cloud" and how that can be beneficial for the state. It's another thing for the procurement director to understand that.

And then, of course, traditionally there was a hesitation to move to the cloud because of security concerns from both the CIO and CPO's office

— which is understandable because CIOs and CPOs are charged with reducing risk to the state. However, in our most recent CIO survey, there's evidence that the hesitation is lifting, because we see that migrating security-related services to the cloud is gaining in popularity.

How do states overcome that aversion to risk in procuring new solutions?

You have to make sure that everyone is in the same room and is on the same page ahead of time. And, I can tell you that does not always happen. That's not just people within the agency. There are things that can obviously be spelled out in a contract. But it is impossible for a CIO, or a CISO or a procurement director to sit down and put every little thing in a contract that could protect a state, because you're basically saying we have to predict every little thing that could happen.

What's more realistic is putting in parameters ahead of time that would allow a state and the private-sector partner to deal with whatever comes up. You must ensure that the state has a good partner in whatever private-sector entities that they're working with. You know, there's a difference between having a partner and referring to somebody as just a vendor or a solution provider.

That is the biggest thing – making sure that everybody is on the same page. Because cybersecurity is a team sport. It's the No. 1 priority of a CIO, and it's a risk-based way to protect the state.

What's your top recommendation for states trying to excel in procurement today?

It sounds very simplistic but honestly, communication between CIOs and CPOs and their offices is the most important thing that can happen right now to improve the acquisition process. We started working with NASPO, and what we found is that communication between those offices may not be great. And it's not just that they aren't meeting all the time, but that when they do meet they are speaking a different language.

There has been this classic tension between CIOs and chief procurement officials where the only time you ever heard about an IT procurement project is when things have gone wrong. You have to change that conversation.

When I say communicate, I mean build a relationship first so if something does go south, the foundation is already there. And you can really educate each other's offices on what you mean by different terms through that relationship.

PROCUREMENT
#4 SHARED SERVICES

60%

of state CIOs plan to expand existing IT shared services models in 2018

72%

of state CIOs consider shared IT services as a way to supplement workforce shortages

organizations realized up to a

50%

increase in back-office efficiencies with shared services

As budgets decline, staff shortages persist and technologies quickly evolve, it's become unmanageable for many local and state governments to acquire new technologies or services in siloes. Not only does individual contracting take significant time and labor; it also ensures that the procuring agency doesn't get the best price available through economies of scale.

That's why many governments are entering into cooperative acquisition agreements, called shared services. In a shared services model, a service is negotiated and managed by one entity while the funding and resources for that service is shared among multiple other groups. For instance, multiple counties might pool resources to deploy a single email service or data management system, rather than having each government procure and manage its own technologies.

But shared services require more than simply agreeing to participate in a single contracting endeavor. As New York's cooperation guide notes, "Many shared services efforts have been initiated, and promptly failed, because well-intended local officials did not lay a solid foundation for their cooperative efforts." That's why we're seeing more state governments step in to facilitate shared services – as well as the coordination required to execute them – at the county and city level, as well as across states.

CASE STUDY: NEW YORK COUNTIES ADOPT SHARED SERVICES

In New York, the government is doing more than creating shared service contracts for state procurements. Since 2005, the state has worked with local governments on a number of shared service projects, including realigning police and highway services for smarter procurement. Now Gov. Andrew Cuomo is looking to help counties achieve shared services related to property taxes with the County-Wide Shared Services Initiative (CWSSI).

Launched in 2017, CWSSI is designed to help local government generate property tax savings "through shared, coordinated and more efficient services between local governments within the county." It tasks the chief executive officer of each county with developing and running a Shared Services Panel, composed of the CEO as well as mayors and supervisors of every locality within that county. Additional members, such as representatives from school districts, may also be included. Together, they must create a plan to implement shared services and make that plan ready for public presentation by Oct. 15, 2018.

To help guide counties, the state has developed a number of resources, including a step-by-step guidance document. To further encourage adoption, Cuomo proposed a $225 million investment in the 2019 budget proposal to match counties' savings acquired through the shared services model.

WORDS TO KNOW

INTERLOCAL AGREEMENTS
Similar to shared services, these are agreements or contracts between two or more local units of governments to provide services to their citizens

SERVICE LEVEL AGREEMENT (SLA)
A document that augments interlocal agreements to outline and define the responsibility for the operations, maintenance, support, upgrades and services of IT systems

IT CHARGE-BACK MODEL
An accounting strategy that applies the costs of IT services, hardware or software to the business unit in which they are used

RESOURCES

Service Contracting: A Local Government Guide

An ICMA guide on shifting from goods procurement models to service-based contracts

A County Manager's Guide to Shared Services in Local Government

An exhaustive guide to creating shared services programs at the county and local level

Local Government Management Guide: Shared Services

This guide by the New York State Comptroller offers best practices and plans to implement shared services in any local government

#5 RISK-BASED ACQUISITIONS

$4 MILLION

is the average consolidated cost of a single data breach at an organization

44%

of local governments reported that their IT systems are under attack hourly or daily

38%

of state CIOs reported that they jointly handle IT procurements with CPOs

New technologies, like the internet of things, automation and virtualization, allow local and state governments to improve internal operations and citizen experiences. For each new tool or service acquired, however, organizations must adapt their processes and networks to ensure they don't also add new vulnerabilities.

For instance, a new virtual training program might allow a state to better train its employees in remote locations. If proper credentialing, access management and user authentication aren't considered in the setup of that program, however, the learning platform might provide illegitimate users access to state information and systems.

To avoid that and similar scenarios while still taking advantage of new technologies, many agencies are beginning to marry the functions of information security and procurement. Their goal is to take a risk-based approach to procurement where no new service or tool is acquired without being carefully vetted for cyber vulnerabilities and vendor safeguards.

To execute risk-based acquisitions, local and state organizations must engage in a constant dialogue between departments, and commit to a constant revision of processes as new technologies develop.

CASE STUDY: COLORADO REVISES RFPS

In the state of Colorado, Chief Information Security Officer Debbi Blyth is committed to having IT acquisition that might have a security implication be reviewed by her office before contracting. But the connection between security and technology isn't always clear-cut. In some instances, even security-minded acquisition professionals circumvent the CISO's risk assessment procedures because it's unclear why it might be necessary.

For instance, Blyth said a routine acquisition with a secure vendor may not be reviewed by the Information Security Office only to realize during deployment that sensitive data will be stored outside of the United States.

To ensure this and similar scenarios are avoided, Colorado's Chief Information Security Office is actively working to standardize procurement events that must get its seal of approval before execution. Rather than placing security officers in every department or on every contract, Blyth's office routinely evaluates its RFP templates if it realizes a relevant event bypassed information security scrutiny. The standard RFP, as well as related service provider contracts, are then updated to include those circumstances, so the next event will automatically go through the office before execution.

WORDS TO KNOW

COTS
Commercial, off-the-shelf products that are deployment-ready but may not have additional, needed security measures in place at time of purchase

RISK ASSESSMENTS
A systematic process of evaluation potential risks that may be involved in a project, service or activity before it is undertaken

ZERO-DAY ATTACKS
Exploitation of an unknown vulnerability in software or hardware to instantly enter a platform or system without impediment

RESOURCES

Procurement Reform Guide

A primer on state procurement reform or re-engineering from the National Association of State Procurement Officers (NASPO)

State IT Procurement Negotiations: Working Together to Reform and Transform

A roadmap for state IT procurement professionals from NASCIO and NASPO

Massachusetts Information Security Risk Assessment Guidelines

A detailed template to guide users through security risk assessments of new and existing IT systems

#6 PUBLIC-PRIVATE PARTNERSHIPS —

34%
of state and local technology procurement spending is for IT services

72%
of state CIOs said they need additional staff for app building, integration and modernization

Through 2018, the amount agencies spend on outside contractors could grow by up to

5%

Given a shortage of skilled IT professionals in government, many local and state agencies are looking to industry to provide more than technology. In some cases, agencies are simply moving to a managed services model, in which a vendor manages and assumes responsibility for providing a defined set of services related to a technology or project. That model decreases the need for agencies to update or maintain systems internally. Responsibility for the output of those systems – and those they are connected to – however, still resides with the government.

Formal public-private partnerships go beyond managed services to place that responsibility with the vendor. In this arrangement, the delivery of services like networking are completely owned and managed by the vendor – as if they were a government entity.

The efficacy of the cross-sector partnership model has been called into question in recent years. Unclear partnership terms, as well as disagreements over cost-sharing, goals and responsibility, are primary culprits for failed relationships. Now, agencies are looking for ways to streamline the model to avoid those pitfalls while still reaping the benefits of outsourced services.

CASE STUDY: GEORGIA OUTSOURCES IT

In 2015, Georgia was like most states in that it was relying on increasingly outdated technology systems. Technology services were also disjointed, with different processes and ownership for many redundant systems. Rather than working toward modernization alone, the Georgia Technology Authority (GTA) sought a partner.

"We needed to flex and adapt to the ever-changing needs of our customers and the types of systems that they need to deliver services … so we started researching. We looked at various models in terms of how we could deliver our services more effectively and efficiently, and we landed on the multi-sourcing services integrator model," said GTA Chief Operating Officer Dean Johnson.

In three stages spanning the past two years, GTA has moved the coordination, integration and delivery of its IT infrastructure to a single vendor, called Capgemeni. In other words, GTA now manages service delivery while an external entity provides and manages technology.

"We finally have a true integrator in place that enables us to be able to focus on the things that we need to focus on as a strategic leader for the state," Johnson said.

WORDS TO KNOW

MANAGED SERVICES PROVIDER

An IT services provider that manages and assumes responsibility for providing a defined set of services to its clients

SYSTEMS INTEGRATOR

A company that brings together component subsystems and technologies and ensures that those subsystems function together, within a larger IT infrastructure

RFP

Request for proposal, a solicitation to potential suppliers for bids by an agency interested in procurement of a commodity, service or other asset

RESOURCES

PPP Reference Guide

A World Bank-sponsored report and guide on the benefits and risks of public-private partnerships in government

### Public-Private Partnership Models

A list from FEMA of different partnership models, as well as case studies from states and cities that have successfully leveraged those models

IS-660: Introduction to Public-Private Partnerships

A two-hour online course for state and local emergency management professionals and planners about building partnerships with industry

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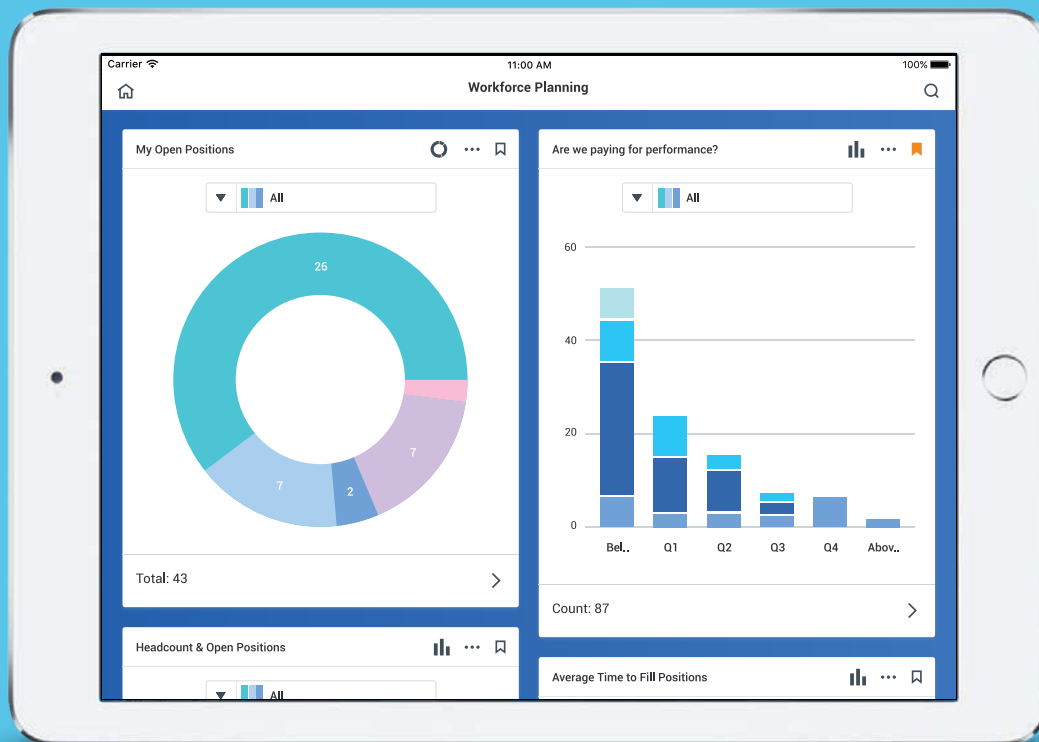
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HOW TO RETHINK CLOUD DEPLOYMENTS
An interview with Dan Wesley, North American Chief Technology Officer at Workday

Cloud computing continues to be a key priority for state and local agencies. Many organizations began by pursuing infrastructure-as-a-service and platform-as-a-service models but are now looking for more opportunities to reap the cost-savings, flexibility and scalability of cloud environments. Specifically, many agencies are considering moving enterprise resource planning (ERP) systems to cloud, since those systems are often the backbone of organizational processes and efficiencies.

"The expense of managing an on-premise ERP system, including the technical requirements to ensure performance and security while continually evolving the application to meet agency needs, is a major reason organizations are moving these to the cloud," said Workday's North American Chief Technology Officer Dan Wesley. He also explained that many legacy ERPs have reached their natural end of life usefulness after being extensively customized to meet niche needs. Workday provides modern, cloud-based and software-centric ERPs for all levels of government.

Before agencies dive into the next phase of their cloud journey, Wesley suggested that agencies rethink the way they have traditionally approached ERP implementation and procurement. He offered several suggestions to improve cloud-based ERP deployments.

Wesley first recommended reconsidering the role of the ERP within a government enterprise. While ERPs commonly manage financials, human resources, and other operational requirements, modern ERPs can offer greater value in new fields. With a cloud-based solution, agencies can use their ERPs to provide collaboration tools, extend service to mobile devices or even fuel robust analytics on operational data.

"What's often neglected is the usability aspect of ERP systems. Look at things outside of just traditional transactions, including end user and agency use cases, as well as new access points," Wesley encouraged. "That's what we live with on a day-to-day basis. What we encounter in many private sector online services should be expected of our ERP systems, as well."

The scalability and adaptability of cloud technology allows agencies to make the most of their ERPs, but those benefits can only be achieved if the right system is acquired to provide that flexibility. Wesley warned that one-size-fits-all approaches in which standard security and contracting language is applied to every aspect of an acquisition, can impede successful evaluation and selection of ERPs.

For many agencies, a broad and templated contract will prevent them from acquiring the best solution to meet their specific needs. Overly strict security requirements may prevent necessary information-sharing or block best-of-breed solutions from consideration.

Instead, Wesley advised taking a holistic approach that balances risk with other considerations. "You have to understand the full scope of your agency's requirements and apply those to your contract," he said. "You have to ensure security but you also have to ensure user acceptability and enable things like embedded analytics and reporting."

Wesley advised writing requests for proposal in a way that allows evaluation of industry standards for security as alternatives to industry-specific standards like FedRAMP certification. He also suggested working directly with procurement officers to review contracting terms and conditions that have not been modernized for cloud procurement.

Finally, Wesley recommended considering platforms that are highly configurable to meet needs as they evolve. With a platform like Workday, agencies can take an incremental approach to building out their ERP's functionality. Users can configure the tool over time, expanding new functionality to new environments in the cloud.

For agencies to pursue this incremental approach and deploy the right cloud-based ERP, they have to think outside of traditional procurement paradigms. In many instances, a trusted third-party vendor can help agencies understand their unique requirements and how to implement them in procurement. "

"We work in partnership with the agency," Wesley said of Workday's approach. "It's understanding the agency's needs and the evolution of those needs from a system support and configuration perspective. It's about learning what makes them unique and then offering a configurable platform to allow them to express the uniqueness in the service itself."

Workday offers a number of highly configurable applications within their ERP system but, more importantly, they help agencies determine which of those capabilities is truly appropriate for their needs. "We want every user to embrace your agency - the change within your agency and the potential within your agency," he concluded. "Then, our software will flux and configure with you."

For agencies moving to the cloud, the next step is migrating business-central systems like enterprise resource planning to new environments. But success will only be achieved if government selects the right partners to move forward.
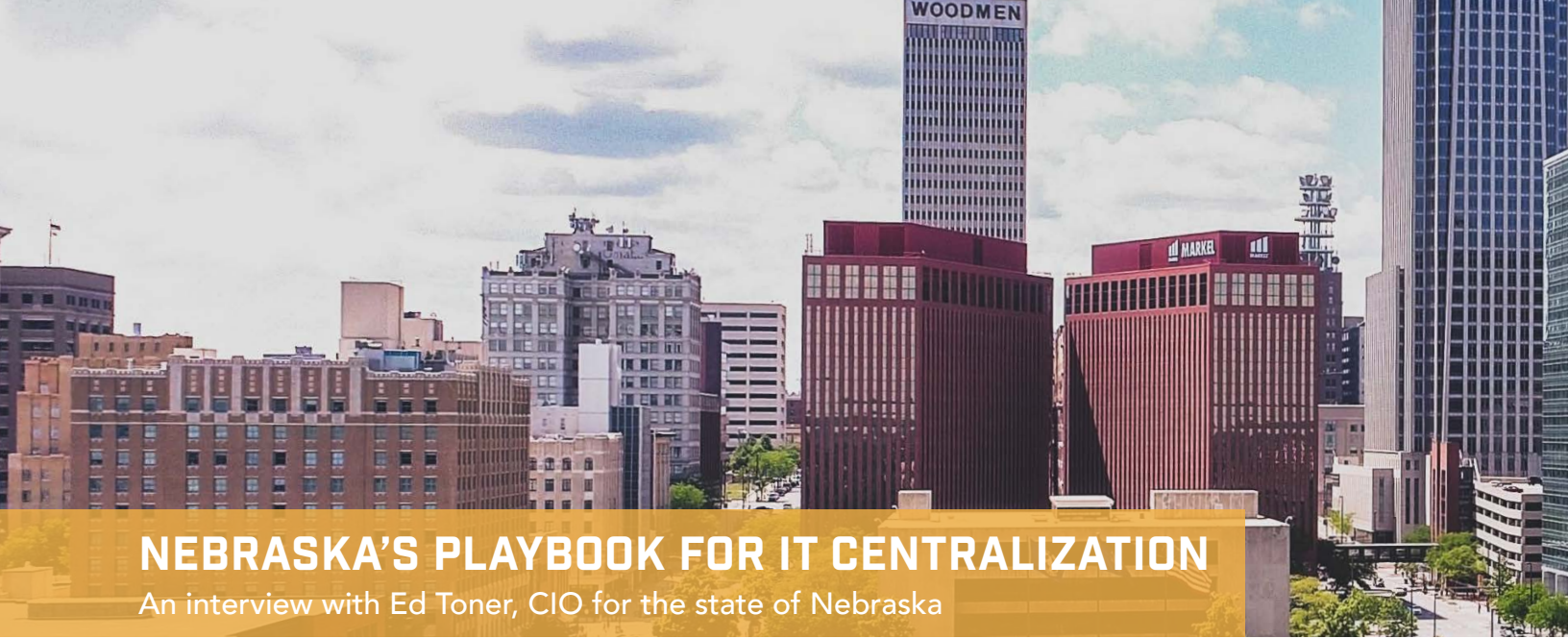
NEBRASKA'S PLAYBOOK FOR IT CENTRALIZATION

An interview with Ed Toner, CIO for the state of Nebraska

In 2016, the Nebraska state government began an 18-month journey to consolidate its data centers, servers, desktop support and engineering staff. Incident management, core surge requests, problem management and change management functions were also centralized.

The project was completed on time, achieving impressive results like consolidating 6,000 square feet of data closets into just two data centers, and moving from seven disparate ITSM products to one system for the entire state. As a result, the state estimates it is already saving about $16 million annually from reduced IT costs.

Now, Nebraska government is working to document the project's outcomes, as well as the steps it took to achieve those goals. The hope is to make the "cookbook" available to other government organizations pursuing IT centralization. In an interview with GovLoop, Nebraska CIO Ed Toner shared his initial insights into the process and offered advice for future IT consolidators in government. Specifically, he offered four themes to consider as other states pursue centralization.

Communicate

Toner's biggest recommendation was to maintain constant communication with stakeholders. "Change is never easy. Even if it's good, no one wants to change," he said. "What we really learned was the importance of communication. Involve HR every step of the way."

He also impressed the need to verify information before communicating it. "Double- and triple-check your facts. A good example is that we surveyed all of our IT staff. Then, we took the surveys to their managers and asked if it was really accurate. Then, we went to the [non-IT] employees to see what they were doing, as well."

This exercise helped Toner and his team understand who comprised the target audience of their project. That included the users of state technology, in addition to the IT professionals on staff.

Use Metrics for Benchmarking

Next, Toner said his team worked to create benchmarks at the onset of the project, rather than "shooting in the dark" for a consolidation plan. "We looked at research and said, 'If we have a state government of 18,000 people, how many IT staff should we have? How should they be divided between operations, network, etc.? What should the idea model look like?' And since Gartner produces metrics every year on state and local government, we compared ourselves to our peer group. We used those metrics to define what an IT shop should be," he said.

Those benchmarks also provided a way to measure progress, allowing the state to set consolidation and reorganization goals and report on them monthly.

Take an Agile Approach

Despite starting with a plan, Toner was careful not to let it hamstring his team. As they continued to talk with government workers, identify IT systems

and measure their progress, they also found new opportunities for centralization. "For instance, we didn't plan it at first, but we consolidated our geographic information systems (GIS). We saw that it would be an advantage, and we saved a lot of money there because we actually were able to consolidate all the data across our state," Toner said.

As they began consolidating GIS datasets, other agencies like the Public Service Commission approached the state IT team. It proactively offered additional GIS data to the team, not only to increase information but also to decrease individual departmental burdens of data storage.

"Now, we have all GIS data housed between our two data centers," Toner said. "That's really significant for the next-generation 911 projects that we have coming up, because they are definitely going to need a robust dataset that's redundant and highly available."

Not only did his team allow for additional state departments and data to roll into the consolidation project, it even considered opportunities to consolidate at lower levels of government. For instance, after realizing the sprawl of county data centers, the state team consolidated 90 individual county servers into four servers across two data centers. "That was so successful that now the counties are coming to us and asking us to take the rest of their servers," Toner said. "Not just the ones that the state had, but actually county-owned servers that they were using for their own support."

Consider TIME

Now that initial goals for consolidation have been met, Toner's team is looking to the future. To determine which potential projects are worth pursuing, they're using a TIME model, which stands for tolerate, invest, migrate and eliminate. In this model, each application in question is graded based on its business value and quality. Where it lands in the TIME quadrant dictates next steps.

For instance, a high-quality, low-business value application would fall in the tolerate quadrant – meaning the state shouldn't sunset the application but it also shouldn't invest more resources in it. In contrast, a low-quality, low-business value application would fall in the elimination quadrant.

Toner explained, however, that his department will use the TIME model in consideration of the larger state IT infrastructure. "That's our focus this year. We're not just going to inventory applications, but document the architecture," he said. That means understanding every other IT component, including servers, firewalls and switches, that is connected to the service.

In the same way that Nebraska started consolidation – with a strategic understanding of state goals, metrics and needs – Toner is committed to continuing to empower state IT with centralization and upgrades.
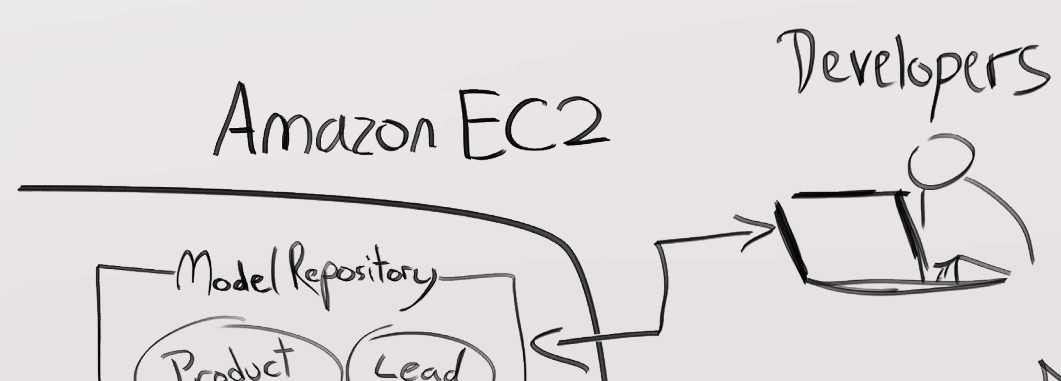
CONNECT WITH CITIZENS USING THE CLOUD

An interview with Jamie Butler and Brian Tracy, Solutions Architect Managers at Amazon Web Services

Many state and local governments are increasingly focusing on expanding their digital services to increase citizen engagement. However, the rapid pace of technological advancement can challenge many agencies as they pursue innovation. In fact, according to a NASCIO survey of state CIOs, 52 percent of states cite agency readiness as a challenge to delivering digital government services.

To learn how many agencies are transitioning to digital services, GovLoop sat down with Jamie Butler and Brian Tracy, Solutions Architect Managers at Amazon Web Services (AWS). They explained what citizen services should look like to effectively engage with citizens through next-generation applications and platforms.

Butler and Tracy began by describing what government's digital transformation should achieve. "An effective citizen service is one that is intuitive to use," Tracy said. "It provides timely information or service in this connected world, and it is both easy to maintain and cost-effective."

Butler agreed: "It can't be something that requires a lot of training or a manual to operate. It has to be simple, and it should engage customers in a way that they are used to being engaged with."

Butler likened the ideal citizen service to many modern company websites, where users are presented with a clean interface, easy navigation and suggestions for potential queries or services. He also noted that services should be available over a variety of channels, including mobile, voice and traditional web portals.

The goals of digital citizen services are clear to many agencies, but creating those functions is not as easy as buying and deploying one-off applications. Instead, organizations strategically craft multiple services that span communication channels and meet a diverse array of citizen needs. For instance, a portal that offers fishing licensing services should connect to other wildlife and agricultural state services and be accessible from mobile or desktop devices. That interconnectivity can spur further engagement and encourage users to pursue other services.

But to create comprehensive digital services, government agencies should rethink the way they approach service development and move away from linear, siloed production methods. Updated methodologies like Agile, human-centered design and DevOps are better suited to meet the changing needs of technologies because they facilitate iterative development and incorporate constant feedback. Those approaches, however, require better tools – namely, cloud computing.

Commercial cloud provides an elastic and scalable infrastructure on which agencies can build new services, and it can help organizations change the way they approach service delivery.

"The cloud provides a common, secure space that facilitates inter-agency and intra-agency data-sharing," Butler said. Information sharing is a critical first step for government organizations hoping to create holistic, connected experiences for constituents. With cloud, agencies can connect their services across websites and environments, as well as the data that feeds them. They can also use common building blocks to build disparate services, offering citizens a cohesive user experience across applications.

With the right cloud service, building applications also becomes easier. For instance, the city of Ottawa, Canada was able to use third-party cloud resources to rapidly prototype solutions and pilot projects in a variety of areas, including deploying the internet of things sensors for traffic applications and water distribution, as well as updating the city's website to handle surges in web traffic.

Cloud can also help agencies better connect directly with citizens, to ensure their services are meeting real needs. "The key in effectively engaging citizens with services is making sure it solves real problems," Butler said. In Johnson County, Iowa, for example, the justice department is using cloud to connect inter-departmental and citizen-generated data to predict and identify populations that would benefit from a pre-jail diversion program.

Agencies can open their services and the data that informs them to more people, with greater confidence, with the cloud. Then, local and state governments can use those services to directly gather feedback from users, understand how service delivery is being received and revise digital service strategies.

That iterative approach, coupled with easy-to-use development features, allows agencies to keep pace with changing demands on their digital platforms and applications. That's the goal of digital transformation.

"What agencies really need is confidence that the technology or services that they plan to build upon are going to persist, and continue to improve over time," Tracy concluded. "To operate on the bleeding edge, you have to test new ideas and cloud can give agencies the capability to do that."

#7 CLOUD COMPUTING

39%

of cities have 10 percent or less of their IT environment in the cloud

45%

of counties believe they could migrate more than half of their existing IT to a cloud environment

55%

of state CIOs report that their organization does not have a cloud migration strategy in place but has one in development

Cloud computing – the use of a network of remote servers hosted on the internet to store, manage and process data – is not a new concept. The private sector has heavily invested in the on-demand, scalable services of cloud for years and the federal government has adopted a "cloud-first" policy for many of its IT investments.

State and local governments, however, were not as quick to adopt cloud due to the inherent complexities and costs associated with deploying new technologies. But according to recent surveys, cloud is now a No. 1 priority for state and local CIOs today. Why?

In fact, having predecessors in federal government and the private sector adopt cloud has been beneficial for smaller agencies. Now, they not only have roadmaps for adoption from other agencies, but state and local CIOs have seen the positive results like cost-savings and agility of real-world cloud adoption.

Today, agencies of all sizes at every level of government are looking for technologies and systems to shift to the on-demand services that cloud can offer.

CASE STUDY: TEXAS EMBRACES HYBRID CLOUD

For many government organizations, fully public clouds are not an option for safeguarding their sensitive information. At the same time, private clouds can prohibit sharing public information that citizens require. To meet both demands, many agencies are adopting hybrid clouds. That's the path that the state of Texas chose.

In March 2017, the Texas Data Center Services (DCS) began adopting hybrid cloud services "to provide customers expanded cloud and self-management options, while meeting the business, security, and regulatory requirements of Texas state government." The hybrid cloud was connected to the existing private cloud used by DCS, as a means of expanding access to the agency's data.

DCS decided to integrate the hybrid cloud after soliciting feedback from citizens and customers. Many reported wanting greater transparency in IT options as well as associated costs. With the new model, not only can users access this information; they can also choose their own cloud models from a self-service catalog. Plus, Texas' hybrid cloud model included a complete pricing restructure that allows customers to only purchase the infrastructure or services needed, and only when needed. That's the ultimate goal of cloud, which, in this case, was facilitated by the cloud as well.

WORDS TO KNOW

AS-A-SERVICE

The cloud delivery model in which the organization or user pays for more or fewer capabilities depending on need, rather than paying for a fixed supply of resources

OPEX

Operational expenses associated with a business purchase. In cloud, this is where agencies expect to see savings

ELASTICITY

The degree to which a system is able to adapt to workload changes by provisioning and de-provisioning resources in an autonomic manner

RESOURCES

Taking Government Cloud Adoption to the Next Level

A GovLoop guide to help do more than simply move to cloud

Building Trust in a Cloudy Sky

This report, based on responses from 1,400 IT security professionals, looks at cloud adoption, changes in data center environments and the challenges with visibility and control over these new architectures

How to Move to Hybrid Cloud

A 10-minute online course that defines hybrid cloud computing and identifies the necessary components of a hybrid cloud transition plan

TECHNOLOGY
#8 CONSOLIDATION

55%
of state CIOs plan to downsize state-owned-and-operated data centers in 2018

47%
of states said they were still pursuing data center consolidation goals in 2017

$13 MILLION
is the amount the state of Indiana saves annually through consolidation

Many governments' IT infrastructures, as well as the unique systems and tools that comprise them, have expanded in a piecemeal fashion. Agencies have added new systems as new needs have arisen. But while those investments have often yielded significant gains like attaining flexibility in the cloud or better performance with new computing resources, many state and local organizations are beginning to suffer the consequences of ad hoc IT additions.

IT infrastructures are becoming more complex with disparate systems spread across locations, generating data scattered across data centers. That sprawl makes it increasingly difficult for agencies to maintain visibility across their enterprise, which in turn risks decreasing cybersecurity. At the same time, maintaining and updating a complex web of systems is incredibly resource-intensive. Not to mention, individual agencies are missing out on economies of scale when they are individually managing so many one-off IT components.

That's why most governments are focusing on consolidation as the first step toward a more manageable and modern IT infrastructure. On the city and county levels, many agencies are consolidating their services like email and payroll to run on a single system, maintained by a single vendor. On the state level, we're also seeing this trend but with even greater scope. Data centers, cloud assets and even desktops are being consolidated to gain efficiencies and security while cutting costs.

CASE STUDY: OKLAHOMA CONSOLIDATES IT

Since starting IT and data center consolidation efforts in 2011, the state of Oklahoma has saved more than $350 million in reduced IT spending and cost avoidance.

The state's 111 agencies used to run and manage their own IT infrastructures. But under CIO Bo Reese, the state centralized IT operations in about five years. They moved every agency's applications and data to two primary data centers, including one for public safety. Additionally, 25 Oklahoma agencies consolidated their individual email systems into a single cloud service.

"The state's Health and Human Services Department (HHS) used to have its own 8,300-square-foot data center. Through virtualization, however, the state was able to move 53 critical systems and consolidate HHS's IT infrastructure down to six racks in the state's new primary data center," Reese said.

Not only has the state saved millions, but it stands to become more efficient by enabling migration off legacy systems.

RESOURCES

Shrinking State Data Centers

A NASCIO playbook for enterprise data center consolidation at the state level

Data Center Consolidation

A white paper describing the components of a successful data center consolidation strategy for agencies at all levels of government

IT Modernization: How Government Does IT

A GovLoop guide to IT modernization, including case studies and strategies related to consolidation efforts

#9 DIGITAL SERVICES

60%

of state CIOs plan to create or already have a digital services organization

66%

of local government agencies said expanded citizen engagement was a top priority for 2018

52%

of states cite agency readiness as a challenge to delivering digital government services

More than ever before, people are turning to the internet to complete everyday tasks like shopping, paying bills and connecting with others. And it's only natural that as citizens become more accustomed to executing private-sector tasks in sleek, intuitive online portals, they begin to desire the same efficient service from government, too. That's why many state and local governments are pursuing digital transformation – the integration of digital technologies and tools into daily processes and operations.

But it's not just rising citizen expectations that are pushing state and local agencies to enhance their digital services. Digital transformation also saves money by reducing expenses associated with paper-based and in-person citizen processes. As budgets and workforces shrink, efficiencies associated with self-service portals can be a game-changer for government.

As agencies pursue new digital pathways, however, it's critical not to sacrifice service or citizen engagement. That's why many government organizations are turning to private-sector strategies like human-centered design and agile development to ensure that users' preferences and feedback are incorporated into new online services.

CASE STUDY: GRAND RAPIDS LAUNCHES A NEW WEBSITE

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

Yet the city government hasn't lost a personal touch. Across 10 months, website planners spoke with numerous citizen users and other government employees about what they wanted from municipal services. That feedback is clearly incorporated into the new website.

Now, the most-needed services are on the homepage for easy access. More importantly, government jargon has been replaced with more conversational language. For instance, instead of assuming a resident knows when and how to change their water service, the website asks, "Did you recently purchase a new home or move to a new location? Do you have a new property to manage? Congratulations! Let's get started on your new services." Then it offers a visual roadmap to complete the task.

Grand Rapids can now more efficiently execute requests and operations without diminishing its customer service or citizen engagement.

WORDS TO KNOW

AGILE

An iterative approach to software development in which minimally viable products are released for testing, feedback is gathered and updates are made on an ongoing basis

OPEN SOURCE

Software or applications for which the original source code is made freely available and may be redistributed and modified for specific use cases

API

Application Programming Interfaces, a set of routines, protocols and tools for building software applications that makes it easier for non-technical users to interact with complex tools

RESOURCES

DigitalGov.gov

A federal government website providing resources, trainings and other information to help agencies at all levels excel with digital projects

Make DevOps a Reality at Your Agency

A GovLoop guide to help increase agile and DevOps approaches in government

Agile IT Delivery: Imperatives for Government Success

A detailed study of seven key factors for state government implementation of agile principles

CONCLUSION

Faced with shrinking budgets, retiring staff and increased citizen demands, state and local governments have no choice but to innovate the way they meet mission objectives. Technology will be a key enabler in that transformation. But as agencies move forward, they will have to adopt a targeted approach to thoughtfully allocate limited resources and fully reap the benefits that new technology can offer. That requires careful consideration of the people and processes surrounding technology investments and planning.

This guide offers the data, resources and examples that agencies need to take their next steps toward IT optimization and modernization.

ABOUT GOVLOOP

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

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

THANK YOU

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WORDS TO KNOW IN STATE AND LOCAL TECH

Accessible Design – The extent to which the design of an organization's environment is manageable for people with disabilities

Agile – An iterative approach to software development in which minimally viable products are released for testing, feedback is gathered and updates are made on an ongoing basis

API – Application Programming Interfaces, a set of routines, protocols and tools for building software applications that make it easier for non-technical users to interact with complex tools

As-a-Service – The cloud delivery model in which the organization or user pays for more or fewer capabilities depending on need, rather than paying for a fixed supply of resources

COTS – Commercial, off-the-shelf products that are deployment-ready but may not have additional, needed security measures in place at time of purchase

Cultural Competence – Knowledge, awareness and appreciation of dissimilarities that allow agency employees to increase their sensitivity and responsiveness to cultural differences between organization employees and citizens

Elasticity – The degree to which a system is able to adapt to workload changes by provisioning and de-provisioning resources in an autonomic manner

eLearning – Non-classroom-based education programs that leverage software and/or the internet to provide training materials and assessments

Individual Development Plan (IDP) – A tool commonly used in government to assist employees in outlining career and personal development goals, as well as steps to meet those objectives

IT Charge-Back Model – An accounting strategy that applies the costs of IT services, hardware or software to the business unit in which they are used

IT Service Management (ITSM) – The entirety of activities that are performed by an organization to design, plan, deliver, operate and control IT services offered to customers

Interlocal Agreements – Similar to shared services, these are agreements or contracts between two or more local units of governments to provide services to their citizens

Learning Management System (LMS) – A software application or web-based technology used to plan, implement and assess a specific learning process; usually virtually

Managed Services Provider – An IT services provider that manages and assumes responsibility for providing a defined set of services to its clients

Open Source – Software or applications for which the original source code is made freely available and may be redistributed and modified for specific use cases

OpEx – Operational expenses associated with a business purchase. In cloud, this is where agencies expect to see savings

Qualified Candidates per Hire – The number of applicants who successfully move past the first phase of candidate screening, versus the number who initially applied

Representation Metrics – The method of measuring internal diversity by comparing the representation of a particular group within an organization to an external benchmark

RFP – Request for proposal, a solicitation to potential suppliers for bids by an agency interested in procurement of a commodity, service or other asset

Risk Assessments – A systematic process of evaluation potential risks that may be involved in a project, service or activity before it is undertaken

Service Level Agreement (SLA) – A document that augments interlocal agreements to outline and define the responsibility for the operations, maintenance, support, upgrades and services of IT systems

Systems Integrator – A company that brings together component subsystems and technologies and ensures that those subsystems function together, within a larger IT infrastructure
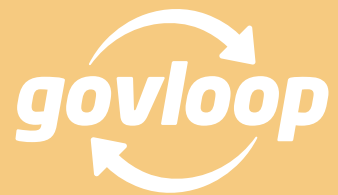
Time to Fill – The length of time between posting a vacancy and having a successful candidate begin work within the agency

Time to Hire – The length of time between initial engagement of a candidate and his or her signing of a final offer letter or commitment

Technology Business Management (TBM) – The practice of running IT departments and assets like a business unit, to better account for and control spending

Virtualization – Creating a virtual version of hardware like storage or networking, in order to make it available off-premise to other users

Zero-Day Attacks – Exploitation of an unknown vulnerability in software or hardware to instantly enter a platform or system without impediment

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