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Digital Transformation Study - Government

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PREPARED FOR

CenturyLink®

About this paper

A Black & White paper is a study based on primary research survey data that assesses the market dynamics of a key enterprise technology segment through the lens of the "on the ground" experience and opinions of real practitioners – what they are doing, and why they are doing it.

About 451 Research

451 Research is a preeminent information technology research and advisory company. With a core focus on technology innovation and market disruption, we provide essential insight for leaders of the digital economy. More than 100 analysts and consultants deliver that insight via syndicated research, advisory services and live events to over 1,000 client organizations in North America, Europe and around the world. Founded in 2000 and headquartered in New York, 451 Research is a division of The 451 Group.

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INTRODUCTION

The objective of this report is to highlight some of the shared learnings of strategists and practitioners with a working knowledge of digital transformation in government and public sector agencies. These findings are part of a larger global study designed to explore the extent of digital transformation playing out in organizations that are planning or actively applying digitization to strengthen their mission. In identifying four key organizational pillars (operational efficiency, customer/constituent experience, agility and management of risk) as drivers for digital transformation, we assess how strategies are being shaped by business imperatives and the priorities of different key vertical markets. This report's focus on the public sector/government will provide insights, directional indicators and recommendations about the state and status of digital transformation, drawing on interviews with 245 decision-makers in public sector agencies at the federal, state and local levels. We thank each and every one for their participation.

451 Research defines digital transformation as the result of IT innovation that is aligned with and driven by a well-planned operational strategy, with the goal of transforming how organizations serve constituents, employees and partners; support continuous improvement; and devise new operating models. From a governmental perspective, digital transformation is most popularly viewed as a means of:

- Improving access to information (for constituents and internal professionals)
- Better sharing of data between agencies
- Anticipating constituent needs

KEY FINDINGS

Digital transformation is everywhere, but in public sector/governmental organizations, the process toward full transformation is moving more slowly than in commercial sectors. This is likely due to longer procurement cycles in the public sector, including spending constraints that often prevent governments from adopting cutting-edge technology. In our study, respondents identified with four key operational goals that drive the digital transformation process: improving agility, enhancing efficiency, boosting customer (citizen or constituent) experiences, and managing risk and security. These are common across industries and organizations. Our survey shows that government agencies are more likely than other industries to lag in their formal transformation initiatives, with three key themes emerging from the data:

GOVERNMENTS ARE SLOWER TO ADVANCE TO THE PLANNING STAGE.

- Roughly 35% of survey respondents in government said that they either have no ongoing digital transformation strategy or they are in the preliminary phases of planning one. This compares to 23% of respondents in financial services who are at comparable stages, 24% in consumer retail, and 23% in healthcare.

- 40% of government respondents said they have a formal strategy and are actively digitizing, in comparison with other verticals surveyed that were at levels of more than 53%.

GOVERNMENTS ARE TIED TO LEGACY SYSTEMS AND PROCESSES.

- 49% say that reliance on legacy systems is the main operational barrier impacting digital transformation projects.

- 47% cite operational constraints as the main barrier, such as siloed or hierarchical organizational structures.

MANAGING THE RISK OF CYBER THREATS LOOMS LARGE.

- 71% rated 'protection against cyber threats' as a top priority shaping their strategies, higher than healthcare (68%), financial services (64%) and consumer retailing (63%).

- 49% put the task of modernizing the cybersecurity strategy to combat cyber criminals as a top digital technology initiative.

Taken together, these findings indicate that while governments are moving more slowly toward data transformation than private sector organizations, those in government are keenly aware of the drivers that are pushing them toward that goal. Survey respondents are concerned that their legacy systems are not up to the challenge of providing top-notch constituent services. They worry about managing risk and preserving security. And they are moving forward with digital transformation, albeit with conservative timing and a deliberate approach.

Reengineering the Past with Digital Transformation

When citizens engage with public sector entities, most have high expectations that have already been set by their experiences in the commercial sector. Government agencies find themselves under pressure to meet rising expectations but are constrained by public sector processes and the speed with which new technologies can be adopted.

Despite having to contend with legacy applications, older infrastructure and the operational barriers of old-style departmentalism, every government agency is motivated to provide smoother, faster, contextually relevant constituent experiences.
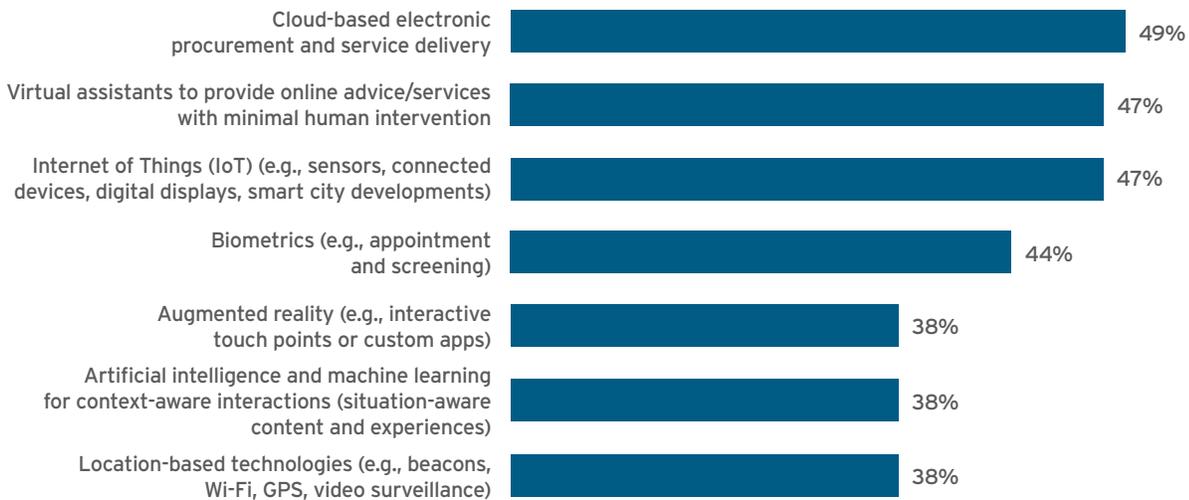
In this regard, digital transformation projects can help government entities leverage new types of platforms and services that effectively leapfrog these legacy problems. This is true with cloud-based technologies that deploy more quickly than on-premises options, and generally have a lighter administrative footprint. Nearly half of those surveyed (49%) see the appeal of cloud-based platforms for electronic procurement and service delivery (see Figure 1), presumably because it allows for speedier response times to constituent problems.

> "Progressive government agencies are using digital transformation initiatives as an opportunity to rethink the past instead of being tied down by it."

Cloud is becoming an organizing principle for any IT shop seeking to optimize the use of resources. Various schemes such as Cloud First introduced in the US and G-Cloud in the UK have helped ease agencies into the era of cloud computing to address many traditional IT problems – underutilization of assets, long lead times for procurement of new compute capacity, etc. Cloud also solves the problem of duplicate systems, often seen when comparing IT infrastructure across agencies (or, in some federal cases, even within the same agency). Where siloed services are deployed, each major application might end up with its own monitoring system, its own backup system, and so on. This type of duplication does not occur as often in commercial organizations, and cloud does help negate some of the redundancy.

Figure 1: Disruptive technologies specific to the public sector

Q: What are the three most disruptive technologies specific to the public-sector that your organization would consider adopting? (n=245)

Technology	Percentage
Cloud-based electronic procurement and service delivery	49%
Virtual assistants to provide online advice/services with minimal human intervention	47%
Internet of Things (IoT) (e.g., sensors, connected devices, digital displays, smart city developments)	47%
Biometrics (e.g., appointment and screening)	44%
Augmented reality (e.g., interactive touch points or custom apps)	38%
Artificial intelligence and machine learning for context-aware interactions (situation-aware content and experiences)	38%
Location-based technologies (e.g., beacons, Wi-Fi, GPS, video surveillance)	38%

Source: 451 Reseach

Successful outcomes call for a heightened need to understand the detailed pros and cons of cloud compared with more traditional service delivery options of hosting or managed services, and to make smart decisions about cloud based on the specificities of workloads and service requirements, and not a mandate. In this regard, about 30% of respondents see a need for assistance from their service providers to help optimize their approaches to cloud, and support them with their cloud migration, onboarding and cloud management operations.

CONSTITUENT SERVICE PRIORITIES SHAPE PLANS

Digital transformation, even if limited in scope and planned over a long term, can be thought of as an exercise in making the organization more flexible. It is a way of putting into place mechanisms that allow functions to be performed in a maximally efficient and transparent way, serving constituents with frictionless experiences.

As illustrated in Figure 1, the use of virtual digital assistants is high on many agendas as a way to foster better engagement with the public, with 47% citing the idea of using virtual assistants to provide online advice or service with minimal human intervention.

Virtual digital assistants are likely to have a dramatic effect on public service delivery in coming years, as a means of providing a higher level of service at lower cost, reserving the expense of human labor for only the most critical situations. This can be a step toward automating common services and citizen inquiries, or in putting services in front of constituents that were simply unavailable before (tracking tax payments, for example, or searching through public records).

Our study also shows that similar numbers (47%) expect that the deployment of Internet of Things (IoT) technologies to better manage the upkeep of vast physical infrastructures will help drive new levels of operational efficiency. They cited using IoT to better manage the large pools of sensors, connected devices and digital displays that are part of modern government responsibility.

Public sector decision-makers, who are charged with safeguarding the infrastructure used daily by citizens and sensibly spending on IT infrastructure for public employees, are understandably keen to leverage modern digital tools to track, secure and audit use and spending on that infrastructure.

Biometrics, artificial intelligence and location-based services are all becoming increasingly common technologies that are identified by government respondents as particularly disruptive, and also the ones most likely to be adopted as part of digital transformation plans

Governments lag private sector digital transformation

For now, though, our study reveals that government institutions lag commercial vertical industries in planning for (and executing) internal digital transformation initiatives aimed at keeping pace.

Government professionals tasked with improving operations and constituent services will want to take advantage of shifts in enterprise technology that can provide the means to accomplish the four main goals of digital transformation (improving operational efficiency, improving constituent experiences, boosting the level of organizational agility and better managing risk).

Those shifts are being driven by an awareness that new tools are needed to better engage with constituents and maintain the integrity of data and systems. The greatest barrier to digital transformation, cited by 51% of respondents, is the continuing reliance on legacy systems.

This may explain why, compared with other kinds of organizations we studied, governments are still in the earliest phases of this process. As illustrated in Figure 2, nearly 15% of respondents said they currently have no ongoing digital transformation strategy, with another 20% in the 'planning stage,' i.e., performing research to determine what that strategy should be.

At the other end of the scale, 40% of government respondents said they do have a formal strategy and are actively digitizing processes accordingly. In other verticals we studied, that figure was above 50%. Clearly there is work to be done.

Figure 2: Maturity level of digital transformation efforts in government

Q: Which of the following best describes your organization's status with regards to digial transformation? (n=245)

15%
We currently have no ongoing digital transformation strategy

20%
We are in the planning stage – researching to form our digital transformation strategy

25%
We have started on siloed digital transformation projects, without an overarching digital transformation strategy

40%
We have a formal strategy and are actively digitizing processes
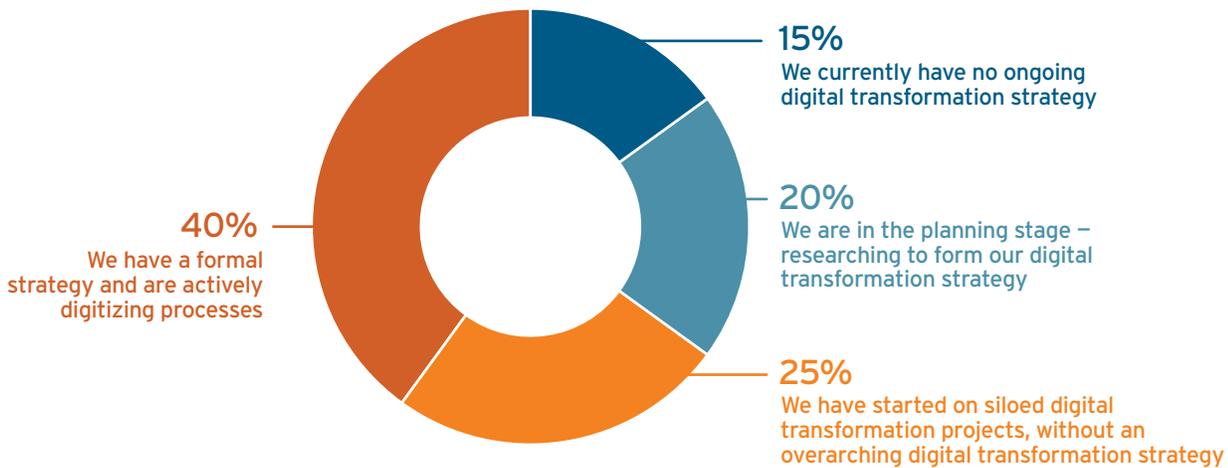
Source: 451 Reseach

Decision-makers are aware of the way that the technology landscape is shifting, and they are making plans to replace legacy infrastructures in order to deliver better services. The key questions are how quickly can this can be achieved; what specific tools and initiatives are going to lead to better outcomes; and how these changes can best be orchestrated in organizationally siloed and hierarchical environments.

Figure 3 illuminates the priorities that affect planning. The key imperative shaping digital transformation cited by government professionals is protection against cyber threats: 34% rated this as 'very important' (compared to 28% of financial services respondents, another famously risk-sensitive group). As many as 71% ranked cyber threats among their highest concerns. When asked specifically about their initiatives, half (49%) cited the need to 'modernize cybersecurity strategy to combat cyber criminals' in the top three.

Figure 3: Imperatives in shaping digital transformation strategies of government

Q: On a scale of 1-10, how important are the following imperatives in shaping digital transformation strategies? (N=245)
Top 3 includes rating 8,9 and 10, Neutral includes rating, 4,5,6, and 7 and Bottom 3 includes rating 1,2 and 3

Imperative	Top 3	Neutral	Bottom 3
Exploit digital technologies to understand societal needs	48%	46%	6%
Provide a platform to collect and follow up feedback about public services	49%	47%	4%
Augment public service delivery channels	51%	44%	5%
Broaden citizen participation/ engagement with online services	53%	41%	6%
Use analytics to anticipate or understand citizen's needs	54%	41%	5%
Share services and systems between government agencies	60%	36%	4%
Empower government employees with intuitive self-serve software tools	60%	36%	4%
Develop digital infrastructure to enable easy access to information and data	62%	37%	1%
Protect against cyber threats	71%	27%	2%

■ Top 3   ■ Neutral   ■ Bottom 3

Source: 451 Research

Concerns about security, combined with the need to create more open environments that allow for easy access to relevant and timely information (62%), mean that digital transformation projects are moving toward balanced initiatives using technology to facilitate open data, better analytics and more digital tools for public engagement.

All the while, the expectations that are building around the citizen-engagement experience have to be addressed. Self-service ambitions figure strongly among respondents, with 60% expecting to empower both employees and citizens with more easy-to-use and intuitive self-service tools. These will offer more citizens direct access to more services, and the development of these technologies will continue to change interactions for the better.

Most public sector work is information-based and historically has been driven by paper. Self-service is one of the most effective ways to meet expectations that are being shaped by customer experiences in retail and leisure services. People want interactions to be immediate and expect responses in minutes or hours, not days or weeks. On-premises self-service kiosks can provide immediate access to government services. Web-based and smartphone self-service apps for access to permits, claims, fines or bills is only the start. Fully digital real-time tax systems, online visa and passport applications, automated municipal payments, probation check-in – the scenarios are endless. Self-service is fast, convenient and time-saving. It will help lower the cost of operations and enhance customer service. It is fundamentally transforming government interactions, and it is a win-win.

> "There are strong signals that planners are thinking ahead about how to fully leverage the data resources that are becoming accessible, and making them more available to the public."

The steady increase in self-serve and online services, the growing use of public and community clouds, and emergence of hyperconnected technologies such as IoT further elevate the critical role of the digital infrastructure. If the core infrastructure underperforms or lacks flexibility, then it is sure to jeopardize multiple areas of operation – an aspect that is not lost on 62% of respondents, who see development of the digital infrastructure as their key imperative.

The full benefits of transformation will only be gained if the digital technologies are deployed in combination with a highly reliable and dynamic network. Success with digital transformation will require networks with the capacity, the speed and the diversity to ensure fast, secure and reliable anywhere, anytime connections between any group of users, devices or applications. And with an increasing reliance on cloud infrastructure to improve scalability and utilization comes the need to build industrial strength into the underlying connectivity. In fact, improved reliability of networks, systems and infrastructure came out in the study as a key IT-led priority.
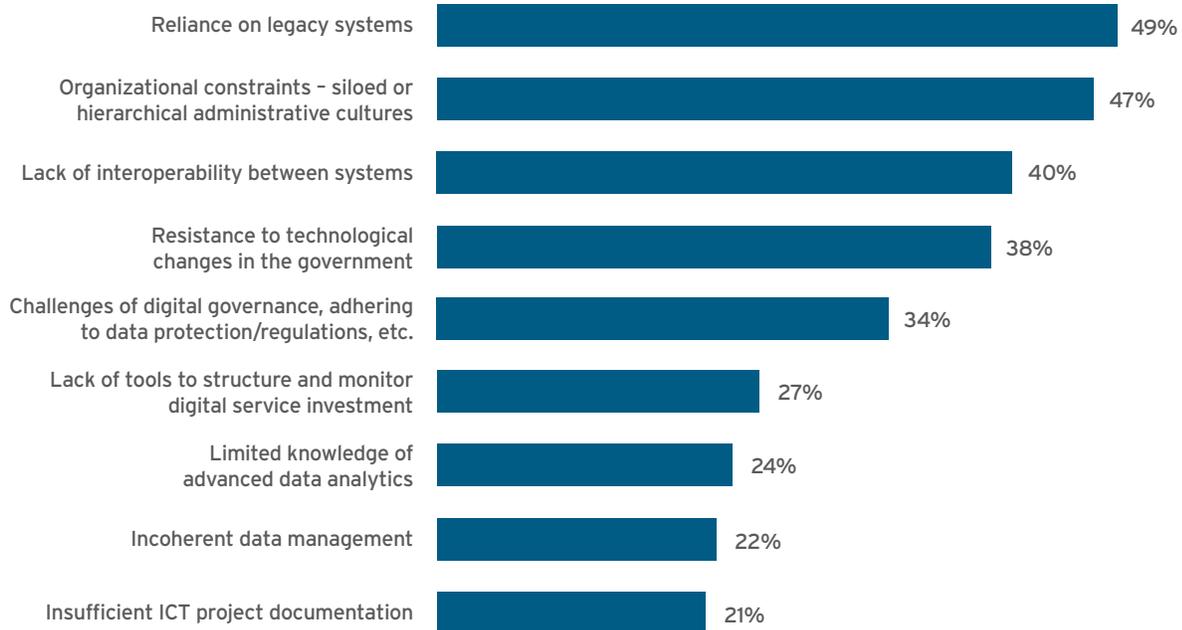
Transformation Leads to Systematic Rethink

The question of whether government can or should be run like a business is a complex and much-debated issue. Regardless of whether one favors more or less 'business thinking' in policy and its execution, the fact remains that the technology landscape allows governments to develop their own processes, rooted in the unique requirements of regulation, social needs and location.

Government planners and technology buyers say they are heavily reliant on legacy systems, to the extent that 49% of respondents cite that as the main barrier to digital transformation projects. And there are other barriers that are perhaps harder to overcome in government than in other sectors. When asked about other barriers in digital transformation projects, one-third of respondents (34% – see Figure 4) cited the 'challenges of digital governance and adhering to data protection/regulations.' While other industries have similar issues with strict standards, few entities have to be both open and secure to the same degree that governments do.

Figure 4: Main operational barriers impacting digital transformation projects in government

Q: Which of the following best describes your organization's status with regards to digital transformation? Base size n=1402

Barrier	Percentage
Reliance on legacy systems	49%
Organizational constraints – siloed or hierarchical administrative cultures	47%
Lack of interoperability between systems	40%
Resistance to technological changes in the government	38%
Challenges of digital governance, adhering to data protection/regulations, etc.	34%
Lack of tools to structure and monitor digital service investment	27%
Limited knowledge of advanced data analytics	24%
Incoherent data management	22%
Insufficient ICT project documentation	21%

Source: 451 Research

About 47% of professionals cited organizational constraints such as siloed or hierarchical administrative cultures, and 40% cited the lack of interoperability between systems as digital transformation barriers. Other barriers primarily faced by governmental organizations include resistance to technological change within the government (cited by 38%), alongside the challenges of 'digital governance,' or adhering to data-protection and other regulatory guidelines. These are not insurmountable hurdles.

> *"Planners have a number of options for making digital transformation initiatives stick, even in complex siloed environments."*

One approach is to work with external specialists as partners in digital transformation projects. Nearly half of professionals in government (49%) said they use or expect to use the services of an outside team, particularly from cloud providers or IT/telco service providers. They gravitated toward managed security services that allow for a quick, flexible response to security threats and malicious activity, as well as business continuity and disaster-recovery systems. The study provided evidence of other ancillary roles for service providers to help advance digital transformation in areas such as data science and managed analytics to multi-cloud management services.

The digital transformation initiatives most cited by government professionals are to modernize cybersecurity strategies (49%) and open data initiatives for greater transparency. Open data initiatives can include making information more accessible through common digital tools and giving constituents a wider window into activities (44% of respondents count open data initiatives as one of their principal initiatives). Planners are also eager to make more data-driven policy decisions that would be both more transparent and relevant to their constituents, with 35% of respondents considering this one of their key initiatives (see Figure 5).

Figure 5: Digital technology initiatives considered key in government transformation

Q: Which of the following do you see as the top 3 digital technology initiatives specific to the public sector? (n=245)

Initiative	Percentage
Modernize cybersecurity strategy to combat cyber criminals	49%
Open data initiative for greater transparency	44%
Promote digital technologies (e.g., social, mobile, video) for public engagement	42%
Deploy data analytics to spot potential social problems and refine public services	42%
Implement advanced analytics for knowledge-based policy-making	35%
Government app store to simplify procurement	33%
Embrace multi-cloud strategies (private and public)	29%
Introduction/extension of electronic voting	25%

Source: 451 Research

The shift to cloud-based app stores and on-demand infrastructure offers an opportunity to jump-start initiatives with relatively shorter procurement and deployment cycles than we have seen in the past. When asked how they expect to allocate their IT budgets over the next few years, a clear majority confirmed that they were looking ahead to shifting a large portion of their infrastructure and applications to the cloud.

Our data shows that only about 22% of IT budgets are allocated toward strategic development of new cloud applications, with 30% of investments today apportioned to maintaining existing infrastructure. The remaining 50% are funding a shift to newer types of on-demand, flexible alternatives such as cloud-based infrastructure or moving toward the adoption of applications delivered 'as a service' that help embrace new strategic applications that are cloud-native.

Historically, government buyers have adopted new technologies once they have been market-tested and found to be reliable and secure. The clear preference for cloud-based tools implies both a confidence in that mode of delivery and a recognition that it enhances flexibility and operational agility.

Four Foundational Pillars of Digital Transformation

Figure 6 reveals how governments are currently planning to transform each of the four organizational pillars of digital transformation. When asked to allocate 100 points across the four goals as they relate to digital transformation, respondents put more emphasis on improving operational efficiency, followed by enhancement of customer experience, improve agility and better managing risk.

Figure 6: Assessing the emphasis on the four pillars of digital transformation efforts in government

Q: Please allocate 100 points across the following organizational goals, as they relate to digital transformation priorities? (n=245)

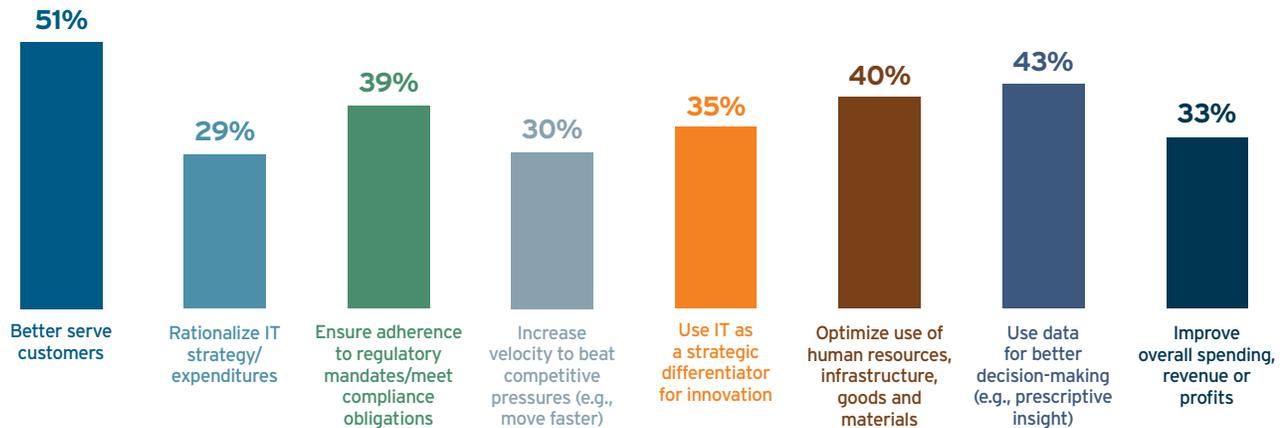| Improve operational efficiency	Improve customer/constituent experience	Improve the level of agility	Better manage business risk
32%	**25%**	**22%**	**22%**

Source: 451 Research

The quests for agility and operational efficiency are closely related. Think of agility as an organization's capacity for reinvention – the ability to pivot and try something new in the face of changing circumstances. To achieve that flexibility from a digital transformation initiative, an organization will need to make it easier for motivated or impassioned constituents to engage (using self-service, for example). It will have to be more open and transparent about data and operations (through open data initiatives, for instance). Changing these elements increases the speed at which a government agency becomes aware of problems.

Efficiency is a more straightforward goal: do more with less. But beyond striving for operational gains, respondents said that their main efficiency objective is to better serve customers (51% – see Figure 7). Drilling deeper, they see the need to use data to make better resource allocation decisions (43%), and to optimize the use of infrastructure and the workforce (40%).

Figure 7: How government agencies plan to transform operational efficiency (data shows the number of respondents selecting the specified objective as one of their top three intentions)

51%	29%	39%	30%	35%	40%	43%	33%
Better serve customers	Rationalize IT strategy/ expenditures	Ensure adherence to regulatory mandates/meet compliance obligations	Increase velocity to beat competitive pressures (e.g., move faster)	Use IT as a strategic differentiator for innovation	Optimize use of human resources, infrastructure, goods and materials	Use data for better decision-making (e.g., prescriptive insight)	Improve overall spending, revenue or profits

Source: 451 Research

From a digital transformation perspective, the study reveals – across sectors – that the most effective technologies to consider for increasing agility and efficiency are cloud-based and managed service platforms and a reliable data network. These are the foundation for IT to move quickly, add data-intensive services and become more responsive. To improve efficiency and reliability, those same technologies, along with tools that minimize worker downtime, will have the desired impact. This can include mobile-based and cloud-based systems that allow workers to act more quickly with access to correct and timely data.

These technologies enable a host of innovative programs that agencies use to better connect with the public (and use the public's resources more effectively). As we've seen, good use is being made of the cloud to enable both electronic procurement and service delivery. Virtual assistant platforms will reduce the human resources footprint needed to provide advice and constituent services.

Improving the constituent experience is a harder and more visible job. Planners can affect what the public sees directly by changing the communications mechanisms to make them simpler or broader (i.e., available over a wider array of contact channels). They can also have an indirect effect through attempts to boost agility and efficiency – for example, by leveraging big data and analytics to anticipate public needs before they become crises or inconveniences. When an agency puts better decision-making capabilities into the hands of those who work with (or on behalf of) the public, the public will see better results.

The fourth digital transformation pillar, managing risk and preserving institutional data security, is also a high priority for government IT professionals and decision-makers. Protecting against cyber threats is cited as both a key imperative driving digital transformation projects and the most important initiative in public sector projects.

Lessons Learned: Steady and Deliberate Transformational Steps

Since the constraints around public sector operations are tighter than in the commercial sector, IT professionals and their colleagues in management are taking a slower and more deliberative approach to digital transformation. But that does not mean they are standing still. Governments are rarely in the forefront of technology adoption, preferring to wait until tools are mature, well understood and clear in their ROI. In the case of digital transformation, however, the barriers are surmountable, and the necessity to adapt is clear.

Recommendations

The survey findings flesh out many of the issues government IT personnel face while confirming that their primary goals are quite similar to their commercial peers. In that light, embracing the similarities provides the keys to charting a path forward.

Reinvent and reengineer. A digital transformation project is more than just a technology refresh; it is an opportunity to revisit inefficient manual processes and augment them with automation and constituent self-service. Think of it as an opportunity to put more tools and data in the hands of the public, which reduces the load on your own staff.

Consider using a variety of partners. Entrusting some of the IT fundamentals to a partner and leveraging the cost-benefits of such moves stands as a critical element of the transformation road-map. Data shows that organizations are increasingly turning to third-party providers – and managed IT partners and cloud specialists in particular – for services to support their digital transformation programs.

Leverage today's advanced technology to leapfrog legacy tools. If the two main barriers to digital transformation are reliance on legacy systems (49%) and siloed or hierarchical administrative cultures (47%), then the good news is that the current generation of cloud-based and managed services for IT infrastructure allows organizations to move at their own pace in leaving previous systems behind. Today's IT management and procurement processes have a greater degree of agility and efficiency baked into them based on the scalability and speed of deployment the cloud provides.

APPENDIX

Methodology

The survey data used in this report was collected in March and April 2017 by 451 Research as part of a global digital transformation enterprise study – commissioned by CenturyLink and conducted in 11 countries across North America, Europe and Asia-Pacific. It is designed to provide insights that will help executives understand how businesses leverage the changes and opportunities of digital technologies to serve different stakeholders, manage risk, support continuous improvement in operations, and invent new services and business models.

In taking the pulse of digital transformation across a broad spread of sectors, we have been able to identify which new IT choices are becoming popular, explore service partner preferences, and track investment priorities, as well as establish the state of vertical-specific digital transformation readiness and evolution.

For the purposes of this report, we reviewed and analyzed data derived from a sample of 245 federal, local, state government/ public sector agencies in the US, UK, Germany, Austria and Switzerland.

Study Demographics

The digital transformation survey was conducted in March and April 2017 and used a combination of web-based surveys and telephone-based interviews comprising about 30 questions. All respondents had primary responsibility for making purchasing recommendations and influencing decisions and strategy about digital transformation initiatives, or they had significant decision-making authority. About 40% of respondents are responsible for decisions about digital transformation strategy, with 60% providing input. Overall, 60% of respondents work as senior IT executives, and 40% lead line-of-business departments for their organizations. Our business segmentation corresponds with the categories typically used by service providers to identify midmarket and large enterprise customers.

Further Information

This report is one in a series to explore the current state of maturity of enterprise digital transformation strategies representative of organizations in key commercial sectors and government agencies in North America, Europe and Asia-Pacific.

The series comprises a set of reports addressing the analysis of the global picture, as well as three summary regional reports that assess some of the variations identified across geographies.

There are also four vertical-market-focused reports that will help IT and line-of-business executives in financial services, healthcare and retail, as well as government agencies navigate some of the key issues and considerations specific to digital transformation themes in these sectors.

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