

Driver Seven: Digital

Optimizing new technology and infrastructure models, focusing on the user experience, and incentivizing innovators to modernize how government does business

Digital transformation can be defined, as described by Faisal Hoque in *Why Design Thinking Is Critical for a Digital Future*, as a process whereby an organization shifts their business models, processes, and organizational culture with digital technologies to adapt to changing customer behaviors. Governments have followed the private sector in adapting digital technologies and ways of doing business. Today's digital challenges involve more than putting information up on the web and creating secure transactions for citizens and businesses. Digital governments can now leverage the promise of open networks in the "cloud," where individuals work together over the internet in a secure environment to communicate and develop new ideas and applications. Given technological advances such as cognitive computing and the IoT, mechanisms exist to collect, distribute, and access vast amounts of data in various formats from a variety of sources that can assist government leaders make better decisions.

Transformative Nature of the Digital Revolution

Digital transformation goes beyond simply advances in technology. It also involves disruption in how problems are tackled, how work is done, and how expectations are met. As described in *Driver Six: Engagement*, the digital revolution also places the user experience front and center.

It has ushered in new ways to improve the experience, leveraging innovative cross-discipline approaches, such as design thinking—a structured, interactive method to facilitate innovation among stakeholders. Digital technologies significantly enhance how government operates. For example, another potential benefit of this revolution involves the application of virtual and augmented reality technology in government. Federal agencies have begun working with VR technology, such as NASA for data visualization and the U.S. Department of Veterans Affairs (VA) to treat post-traumatic stress disorder.

This revolution drives major changes for how government does business. As the U.S. Federal CIO Council's *State of Federal IT* report states, the changes required to move to a digital government will significantly impact every federal agency and its employees. The path to a successful IT future is possible through better internal collaboration, improvements to human resources and procurement operations, a shift away from legacy systems, and a continued push towards transparency and open data. Such a transformation will require changes to both culture and policy.



Today's digital challenges involve more than putting information up on the web and creating secure transactions for citizens and businesses.

Evolving Digital Government Landscape

The transformative opportunities described above build on two decades of progress that reflect advances in how government has leveraged the internet. These phases of change fall into three broad areas, and the functionality that each era brought remains part of the overall digital government landscape.

- **Digital Government 1.0** – In this era of “Basic e-government,” agencies moved paper-based information online without any significant reform of the process that could simplify and streamline the interactions that citizens and businesses have with government. At the infrastructure level, agencies began to review legacy systems and develop initial modernization strategies.
- **Digital Government 2.0** – The “Advanced e-government” stage saw agencies leverage communication technology to enable secure transactions with government. Citizens could apply for and receive benefits and permits and could make payments electronically. However, these services were still delivered in silos where agency applications focused on each user in a “citizen-centric” manner but did not scale across user experiences to improve the quality of transactions. At the same time, government also sought to develop shared services for back-office applications like HR and finance.
- **Digital Government 3.0** – In what characterizes much of the current state of digital government, the advent of social media and other collaborative technologies has created new pathways for citizens and businesses to communicate with governments. New digital technologies, including mobile apps and open networks that relied on cloud computing, led to opportunities to involve benefit recipients, regulated businesses, or even government contractors in government processes. Co-creation and co-production of policies and programs have become more common. Technology platforms now leverage open source and agile development to foster communities of public and private sector practitioners who build new systems based on understanding user experience at scale. Common and shared services delivered through central portals have provided a foundation for accessing multiple programs with a consistent process—enabling a “lean” government that promotes effectiveness and efficiency.

However, as disclosed in the IBM Center report, *Using Mobile Apps in Government*, only 3 percent of people interact with U.S. federal government agencies digitally and only 17 percent of the 438 federal agencies have a digital app. The future of a digital reinvention in government will transform service delivery and citizen interaction.

Moving to the Next Phase of Digital Government

To take full advantage of the transformational changes made possible through the speed and scale of digital technologies, those served by government must help drive how agencies work with them. Citizen-driven government will adapt to the needs and expectations of citizens, businesses, non-profits, and other partners to create interactions that are personalized, interactive, and easy to access and use. Cognitive technologies can enable systems to understand, reason, and learn over time, enabling government to interact with the broad public in real time and with strong security and privacy protections. Agencies can leverage digital approaches to transform how government engages with the public across the full range of mission and mission support activities.

To build the foundation for tomorrow's citizen-driven, digital government, agencies must find ways to invest in modern technologies to support secure and scalable applications. Identifying and prioritizing efforts for investment, integrating these priorities into agency and federal budget planning cycles, and applying appropriate measures to track the success of key efforts will drive solutions based on modern, cloud-enabled IT infrastructure, mobile services, and IT security. Critical to effective investment in digital modernization is understanding the existing barriers to capture savings over time from those investments and identifying means to overcome these barriers. Defining pathways to invest in emerging technologies that can help government will inform where and how private sector entities may most effectively support digital transformation in ways that improve performance and reduce costs.

Characteristics of a Successful Digital Organization

The digitally transformed government organization of the future will make smart technology investments and change culture. It will challenge outdated processes, use fresh insights to make decisions, and apply a user-focused lens to every facet of their missions. For government, the new digital culture is one in which citizens can engage in new ways to help frame policies, shape programs, share information, and receive services. The characteristics of organizations that are harnessing the key breakthroughs of the digital revolution include the following:

- **Persona-Centric:** create differentiated experiences for all users—citizens, employees, and constituents.
- **Strategically Agile:** apply agile, iterative principles across the enterprise, and consistently learn, refresh, and improve.
- **Sustainably Resilient:** focus on safeguarding against current and emerging threats in today's data-driven, highly distributed world.
- **Actionably Insightful:** capture, analyze and employ data effectively to uncover valuable insights, make decisions, and optimize performance to deliver mission outcomes.
- **Responsively Operational:** use digital principles and tools to improve operations, services and processes leveraging real-time feedback, automation, and lean principles.
- **Access-Empowered:** empower end-users by providing multiple channels for anytime, anywhere access to information, transactions and feedback, especially through increased mobility and accessibility.
- **Eco-System Orchestrated:** explore new, innovative partnerships and incorporate new technology solutions that stay nimble and flexible to achieve evolving mission objectives.
- **Dynamically Talent-Driven:** identify and retain top talent who share knowledge and remain challenged and engaged to meet mission needs of the mission.

Implementing tomorrow's digital government will require additional focus on modernization strategies, development of enabling technologies, and governance and funding that promote investing in a digital future.

Modernizing IT and Realizing the Benefits of Digital

A recent IBM Center report, *Digital Service Teams: Challenges and Recommendations for Government* by Ines Mergel finds that an important driver to rethinking government approaches to digital service delivery is the so-called “legacy IT” problem, which stems from the fact that many countries began to digitize their operations decades ago using technologies now “aging in place.” In the U.S., the GAO reported that about 75 percent of record-high spending on government IT in 2016 went to the operation and maintenance (O&M) of legacy systems that are becoming obsolete. The OMB has estimated that \$3 billion worth of federal IT equipment will reach end-of-life status in the next three years.

Private sector experience has demonstrated that strategic investments in technology can produce long-term cost reductions and bring a significant positive return. As noted in the Technology CEO Council (TCC) report *The Government We Need*, duplicative and obsolete legacy systems can be replaced with modern technologies on more cost-efficient platforms. A 2015 report by the Information Technology and Innovation Foundation suggests that every \$1 increase in new IT spending led to as much as a \$3.49 reduction in overall government expenditures. Applied to the scale of the federal government, this invest in new IT systems could yield billions in reduced costs while improving productivity.

Building for the future requires agencies to transform legacy systems using cloud services and shared solutions that will result in substantial cost savings, allowing agencies to optimize spending and reinvest in critical mission needs and leverage modern technologies such as mobile and the IoT.

Leveraging Mobility and IoT

Mobile devices continue to transform the way Americans work, live, and learn and how all enterprises do business. Continued expansion of mobile self-service and supporting infrastructure are essential to meet the needs and expectations of the federal workforce and the American public. In addition, several cities have begun applying mobile technologies not only to provide valuable services to employees and citizens, but also to help governments explore opportunities to reduce transportation spending, improve sustainability, manage infrastructure, and monitor public health and safety. Mobile technologies remain an essential component of the foundation for future government innovations.

Adopting IoT technologies and supporting the interoperability that enables systems to work together, agencies can also drive improvements in operations management, industrial production, and services. Cities around the world are using IoT to deliver services at lower costs, among other benefits.

Implementing Digital Government

Driving change in the federal government requires more than new policies or the infusion of new technology; it requires a sustained focus on implementation to achieve positive and significant results. Mergel explains, “digital transformation is a holistic effort to rethink and change the core processes of government beyond the traditional digitization efforts in government. It evolves along a continuum from the use of agile methods and changes in IT contracting practices to organizational change efforts that involve the whole ecosystem of the organization.”

Changes in IT contracting practices also involve government leaders identifying new approaches to procure commercial technologies and recognize the return on investment (ROI) over time. Current procurement rules limit agencies' ability to buy technology "as a service" and pay for it over a 5–10-year period. With private sector funding, agencies can fully focus on their missions and approach IT modernization as a service they buy over time, not limited to whether they have funds for a multi-year investment in the current year's budget. The government can work with private sector partners and acquire modern technology to provide cost effective services for American taxpayers.

Improving the acquisition of commercial technologies can enhance functional and technical modernization for shared services, in numerous ways:

- Enable investment of budget and private sector funds up front, to be recouped based on measurable financial results—a commercial financing model.
- Use of ROI to determine solutions.
- Move faster: achieve implementation within 24 months.
- Foster innovation and constant improvement.
- Reduce siloes and hidden inefficiencies.
- Move to subscription models that more agencies can join quickly.

Some current models exist for this approach, which create exceptions from current annual budgeting rules and allow for multi-year payback. These include real estate leases, energy usage reductions, and some specific agency IT models (such as the NASA working capital fund). With appropriate incentives and flexibilities, government can bring in and scale offerings far more easily than has been the case to date.

These new ways to procure digital tools and technologies can drive fundamental change in how government serves both its internal and external customers through a 21st century platform.

Conclusion

Digital government enables citizens and an increasingly mobile federal workforce to securely access high-quality digital government information, data and services anywhere, anytime, on any device. As government adjusts to this new digital world, agencies must work together to build the modern infrastructure needed to support digital government efforts and leverage the federal government's buying power to reduce costs.

As the TCC report *The Government We Need* concludes, the world is in the midst of a digital revolution, transforming the way people access and act on information to benefit their lives. The digital government of the future will no longer simply automate previously manual processes. Rather, citizens will help drive agencies to modernize, and agencies will work together to integrate systems and applications across platforms. Digital government can disrupt previously entrenched business models, enhance service quality, and reduce costs. As the 21st century evolves, digital government will drive efficiency, effectiveness, and performance improvements. It is about harnessing the power of technology to help create a twenty-first-century digital government—one that is focused meeting the challenges of today while seizing the opportunities for tomorrow.

Chenok, Daniel. *Transforming Government Through Technology*. IBM Center for The Business of Government, 2017.

Ganapat, Sukumar. *Using Mobile Apps in Government*. IBM Center for The Business of Government, 2015.

Hoque, Faisal. *Why Design Thinking Is Critical For A Digital Future*. Hackernoon. May 30, 2017.

Mergel, Ines. *Digital Service Teams: Challenges and Recommendations for Government*. IBM Center for The Business of Government, 2017.

Technology CEO Council (TCC). *The Government We Need*. 2017.

U.S. Federal CIO Council. *State of Federal IT*. 2017.

Wedge, Susan. *Improving citizen experience through digital transformation: 2016 post-election reflections*. IBM Government Industry Blog, 2017.