On the road to MODERNIZATION

Government agencies are navigating the challenging terrain of IT modernization with the help of ever-evolving tools and techniques

THE DUAL EMPHASIS on IT modernization and digital transformation is having a revolutionary impact on government. The benefits are well-known — streamlined operations, reduced costs and increased innovation, to name a few. However, to achieve those benefits, agencies must go beyond updating IT systems to modernize every aspect of government.

Some agencies are already making progress. In a 2018 survey by MeriTalk and ACT-IAC, 69 percent of respondents said their agencies were working on IT modernization in a "more integrated, holistic way than ever before." Furthermore, 77 percent of respondents said they believe that the wholesale change modernization requires is feasible in the next five years.

That progress is being driven by a variety of laws and policies, including the Executive Order on Strengthening the Cybersecurity of Federal Networks and Critical Infrastructure, the Cloud Smart Strategy, the Federal IT Acquisition Reform Act and the Modernizing Government Technology

(MGT) Act. Such top-level support is crucial for ensuring that agencies have the resources they need to modernize.

The MGT Act, enacted in 2017, empowered agencies to deploy next-generation technologies and capabilities and authorized the creation of the Technology Modernization Fund — a pool of money from which agencies can borrow to pay for modernization projects.

In addition, the new Cloud Smart Strategy underscores the key role that cloud technology plays in modernization. The strategy focuses on improvements to security, procurement and the workforce so that agencies can take full advantage of cost-effective, secure, mission-centric cloud solutions.

A more flexible, powerful infrastructure

Policies aside, agencies across the government are embracing modern approaches to software development because they offer the ability to quickly solve complex problems. For instance, the

Air Force's innovative Kessel Run project has delivered about 12 software solutions that are used daily in combat, including an app called Kronos that was created to alleviate problems with the F-35 fighter jet's Autonomic Logistics Information System. Kronos could form the basis for a future cloud-based version of the system.

Many of those apps incorporate automation to free personnel for higher-value activities. According to an Air Force news release: "Air Force-led software teams have saved warfighters 1,100 man-hours per month by automating labor-intensive data entry at operations centers where combat is orchestrated."

Regardless of where they are on their modernization journeys, agencies need tools that support new approaches to IT infrastructure, cloud adoption and data protection.

Some agencies are saving money and streamlining IT activities through the use of hyperconverged infrastructure. HCI is a software-defined IT platform that combines and virtualizes computing, networking and storage into a pre-integrated package that allows for unified management. The clustered infrastructures pool physical resources and share them between virtual machines running on any host in the cluster.

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IT MODERNIZATION by the numbers

83%
Share of finance, IT and procurement decision-makers who said their agency's future mission success depends on modernization
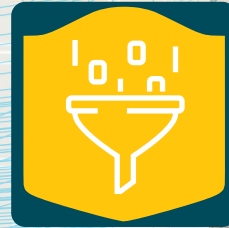
$90M
Amount the Technology Modernization Fund approved for seven projects at five agencies in its first year

12,000
Number of labor hours the General Services Administration expects to save by using robotic process automation to handle routine activities

175 ZB
Predicted amount of data captured worldwide by 2025 (1 zettabyte equals 1 trillion gigabytes)

$17.1B
Projected value of the hyperconverged infrastructure market by 2023

Sources: GSA, IDC, MarketsandMarkets, MeriTalk, Office of Management and Budget

HCI got a big boost in 2017 when the General Services Administration added 10 hyperconverged cloud solutions to its IT Schedule 70. The contract vehicle covers "the most common HCI applications and will enable agencies to simplify their data centers and transition away from legacy infrastructure to a more operationally efficient, modern and optimized platform," a GSA announcement states.

IT infrastructures are also being transformed through the use of cloud technology, with many agencies adopting hybrid cloud environments that combine on-premises, private and commercial clouds based on mission and security needs. That approach offers flexibility, scalability and seamlessness to users while recognizing that no single solution fits all needs.

For example, the Defense Department Cloud Strategy released in December 2018 states that the optimal cloud environment provides "application and data efficiencies for hybrid cloud and multi-vendor solutions." Accordingly, an article on DOD's website says DOD's commercially run general-purpose cloud — the Joint Enterprise Defense Infrastructure — "cannot meet every DOD need, [so] the department will also have special-purpose — also known as fit-for-purpose — and internal-purpose clouds."

Cultivating trust in new technologies

In the same article, CIO Dana Deasy noted that cloud's computing power is essential for reaping the benefits of another modernization technology: artificial intelligence. "It's almost a fundamental imperative to have a cloud in place to do great things with AI," he said.

Other government leaders also recognize AI's importance. President Donald Trump's Executive Order on Maintaining American Leadership in Artificial Intelligence states that AI "promises to drive growth of the United States economy, enhance our economic and national security, and improve our quality of life." The order calls for increased investment in AI research and development.

In addition, the National Institute of Standards and Technology said AI "has the potential to impact nearly all aspects of our society" but adds that AI "must be developed in a trustworthy manner to ensure reliability, safety and accuracy."

Several AI applications are already finding success in the federal sector in a wide range of areas. For example, the Department of Homeland Security uses AI-based tools to detect network intrusions. The Defense Advanced Research Projects Agency developed Digital Tutor to more quickly and effectively train Navy personnel to be IT professionals. And the Bureau of Labor Statistics uses AI to analyze data on workplace injuries, completing in a day what it took a person a month to do, according to an article in the Professional Services Council's magazine.

With so many modern applications, such as AI, relying on data to function well, protecting that data is essential. In a white paper released in November 2018, IDC states that "data is at the heart of digital transformation." Furthermore, data will continue to grow exponentially, fueled in part by the expanding internet of things.

To encourage responsible adoption of that emerging technology, NIST has created a program dedicated to IoT cybersecurity. Its mission is to "cultivate trust in...IoT and foster an environment that enables innovation on a global scale through standards, guidance and related tools."

IT modernization promises to revolutionize government operations, but it is a massive undertaking that requires a shift in government culture and the development of new skills to support new technologies. By modernizing technologies and processes now, agencies are on the road to creating a more streamlined and innovative government. ■