Agile, Adaptable, Advanced: Winning with Smart IT Investments

APRIL 28, 2021
BY: BRYAN HICKMAN

A publication of the National Taxpayers Union

Introduction

For more than two decades, leaders in both Congress and the Executive Branch have worked to bring the federal government's information technology (IT) into the 21st Century. While some progress has been made on several fronts, these efforts have largely been hindered by institutional inertia, insufficient funding, and personnel issues. As a result, many federal agencies are still using outdated and oddly expensive IT systems. Facing similar issues, some state and local governments have made investments to update hardware and modernize their IT platforms. But many others continue to use aging and obsolete systems, hoping to be able to afford upgrades in a future budget cycle.

Failing to update IT systems increases costs to taxpayers – both immediate and long-term – and reduces efficiency of government operations at all levels. Outdated systems also leave security gaps that can more easily be exploited by criminals, cyberterrorists, or hostile foreign governments, which impose an additional burden on taxpayers to remedy. Outdated IT can also hinder government agencies' ability to effectively respond to crises.

Over the past year, these concerns have unfortunately become more than just hypotheticals. At the outset, the COVID-19 pandemic exposed longstanding weaknesses in government operations at both the federal and state levels, renewing the public's focus on critical services and ensuring agencies can fulfill their missions and provide services even under the worst possible circumstances. Economic relief payment programs have also shined a light on several ongoing IT challenges, which the new administration and Congress now have to confront.

In many ways, the pandemic has generated momentum for government IT modernization efforts. Indeed, some agencies and jurisdictions have responded with rapid IT improvements to keep up with massive increases in demand for government services. In many cases, the ability of governments to implement near-term solutions has been remarkable. Going forward, federal and state governments should look to capitalize on this renewed demand for modernization to address their long-term needs and make systemic changes to ensure progress continues beyond COVID-19's emergency measures.

This paper will discuss the state of government IT in the United States, both pre-pandemic and today. The first section will discuss the longstanding IT problems that have plagued governments at all levels for decades and highlight recent areas of progress. The next section will examine the impact of the COVID-19 crisis – both positive and negative – on IT modernization efforts. The final section will provide some thoughts and recommendations for policymakers as they consider these issues, both in their responses to ongoing crises and in any future efforts to apply the lessons learned during the pandemic.

The State of Government IT – Pre-Pandemic

The federal government spends about $90 billion a year, about three times the annual budget for the entire Justice Department, on IT for all its agencies. Roughly 80 percent of that amount goes to maintaining and operating existing systems, leaving only a small fraction of resources available for upgrades or modernization.

For decades, various efforts to modernize the federal government's IT systems have been hampered by poor planning, bureaucratic impediments, and insufficient funding. According to the Government Accountability Office (GAO), despite the tens of billions of dollars spent on federal IT systems every year, modernization efforts have "often resulted in multimillion-dollar cost overruns and years-long

schedule delays, with questionable mission-related achievements." These problems have stemmed from "a lack of disciplined and effective management," because departments and agencies have "not consistently applied best practices that are critical to successfully acquiring IT investments."[1]

Bipartisan congressional majorities and multiple administrations have attempted to fix these problems. Major federal IT modernization initiatives from the past decade alone include:

- The 25-Point Implementation Plan to Reform Federal IT Management, 2010. An Obama Administration project aimed at reforming government IT acquisitions, increasing operational efficiency, and reducing costs. Highlights included goals to terminate underperforming IT projects, reduce the number of federal data centers, and shift to a "Cloud First" policy for agency data storage.[2]

- Federal Information Security Modernization Act (FISMA) of 2014. Updated federal cybersecurity efforts by clarifying agency responsibilities and promoting the use of enhanced security tools to monitor and maintain the government's security posture. It also improved oversight of federal agencies' information security programs.[3]

- Federal Information Technology Acquisition Reform Act (FITARA) of 2014. Codified several of the Federal Chief Information Officer's (CIO) ongoing initiatives and updated processes and metrics used in IT acquisition and management. It also required agencies to submit annual reports that include multi-year strategies for IT improvements and updates on any cost savings resulting from the new IT practices.[4]

- Modernizing Government Technology (MGT) Act of 2017. Allowed agencies to set up working capital funds to transition away from outdated legacy IT systems. It also created a Technology Modernization Fund (TMF) within the Treasury Department to further help agencies retire and replace old systems.[5]

- Office of American Innovation (OAI), 2017. Established by the Trump Administration to "make recommendations to the President on policies and plans that improve Government operations and services," among other things.[6]

- American Technology Council, 2017. Chaired by the President with various cabinet secretaries and agency heads serving as members, the Council – established by a Trump Administration executive order –was set up to help the federal government "transform and modernize its information technology and how it uses and delivers digital services."[7]

- The President's Management Agenda, 2018. A comprehensive plan released by President Trump that lists IT modernization as one of three "Key Drivers of Transformation" in the effort to modernize the entire federal government. It also outlined a broad framework for identifying and prioritizing opportunities to ensure that "strategic IT projects are better positioned for success."[8]

---

[1] U.S. Government Accountability Office. "Information Technology: Additional Actions and Oversight Urgently Needed to Reduce Waste and Improve Performance in Acquisitions and Operations." GAO-15-675T, June 10, 2015. https://www.gao.gov/assets/680/670745.pdf.

[2] Kundra, Vivek. "25-Point Implementation Plan to Reform Federal Information Technology Management." The White House, December 9, 2010. https://www.dhs.gov/sites/default/files/publications/digital-strategy/25-point-implementation-plan-to-reform-federal-it.pdf.

[3] U.S. Government Accountability Office. "Information Technology: Agencies and OMB Need to Continue Implementing Recommendations on Acquisitions, Operations, and Cybersecurity." GAO-20-311T, December 11, 2019. https://www.gao.gov/assets/710/703114.pdf.

[4] U.S. Congressional Research Service. "The Current State of Federal Information Technology and Acquisition Reform and Management." R44843, July 10, 2019 (updated) https://crsreports.congress.gov/product/pdf/R/R44843/13.

[5] GAO-20-311T. December 11, 2019. https://www.gao.gov/assets/710/703114.pdf.

[6] The White House. "President Donald J. Trump Announces the White House Office of American Innovation." March 27, 2017. https://trumpwhitehouse.archives.gov/briefings-statements/president-donald-j-trump-announces-white-house-office-american-innovation-oai/.

[7] Executive Order No. 13794. Establishment of the American Technology Council. 82 FR 20811. April 28, 2017. https://www.federalregister.gov/documents/2017/05/03/2017-09083/establishment-of-the-american-technology-council.

[8] The White House. President's Management Agenda, April 2018. https://trumpwhitehouse.archives.gov/wp-content/uploads/2018/04/ThePresidentsManagementAgenda.pdf.

Even this long list is incomplete, in that it does not capture IT provisions in numerous laws affecting individual agencies. For example, an entire title of the Taxpayer First Act of 2019 was devoted to directing the Internal Revenue Service to improve cybersecurity, modernize IT, and expand the use of customer-friendly systems for electronic signatures.[9]

FITARA stands out among these efforts because it created benchmarks and metrics for evaluating the progress of federal IT improvements. As part of this ongoing evaluation, the House Oversight and Reform Committee – working with GAO – releases a biannual scorecard to chart agencies' progress (or lack thereof) in implementing the reforms prescribed under the law. These scorecards indicate that the numerous initiatives aimed at modernizing federal IT have produced mixed results.

Overall, the scorecards show that the IT modernization effort among covered agencies is trending upward. On the first scorecard, released in November 2015, the average grade was a "D" across all the agencies and reform categories. Three agencies – the Departments of Education and Energy, and NASA – received failing grades. Five years later, on the December 2020 scorecard, the average grade was a "C+," with no agencies receiving failing grades.[10] While this isn't a resounding success in the big picture, the grades do suggest the incorporation of new metrics and increased accountability have had a positive overall effect.

The scorecards also show significant improvements in some narrower categories. For example, the federal government is the largest software purchaser in the world – it spent more than $9 billion on software in 2019 alone.[11] In the past, agencies often purchased too many or too few software licenses for their needs, which led to significant cost overruns, usually in the form of increased fees or penalties for noncompliance with license terms.[12] In the years since FITARA's passage, most federal agencies have taken major steps to track and maintain a comprehensive software license inventory to assist purchasing decisions and reduce costs.[13] Every covered agency received "A" grades for software license management from GAO on the most recent FITARA Scorecard.[14]

Agency efforts to consolidate data centers and migrate data storage to the cloud have also yielded some positive results. The FITARA Scorecard has shown consistent progress in this area, particularly over the last three years.[15] From FY2012 through FY2020 – in response to various executive and legislative mandates – data center consolidation saved taxpayers about $6.24 billion, with over a billion dollars in savings coming in just the last two years. The reported numbers would likely have been higher but for recent OMB changes to the definition of "data center."[16] Similarly, between 2016 and 2019 more than half of covered agencies increased their use of cloud services, saving taxpayers at least $291 million over that time. However, according to the most recent GAO status update, the majority of federal agencies had failed to consistently meet required benchmarks on cloud migration, which suggests that federal agencies continue to leave considerable cost savings and improvements on the table.[17]

Much of the progress seen in federal IT modernization has been overshadowed by long-standing federal IT problems that continue to go unaddressed. As noted above, the federal government spends roughly

[9] 116th Congress. H.R. 3151: Taxpayer First Act. P.L. 116-25. https://www.congress.gov/bill/116th-congress/house-bill/3151/text.
[10] FITARA Dashboard. MeriTalk. https://fitara.meritalk.com/?sort=grade.
[11] Cornille, Chris. "Cyber, Cloud, AI Spur IT Spending Growth in FY 2019: This Is IT." *Bloomberg Government*, January 8, 2020. https://about.bgov.com/news/cyber-cloud-ai-spur-it-spending-growth-in-fy-2019-this-is-it/.
[12] U.S. Government Accountability Office. "Federal Software Licenses: Better Management Needed to Achieve Significant Savings Government-Wide." GAO-14-1413, May 22, 2014. https://www.gao.gov/products/GAO-14-413.
[13] GAO-20-311T. December 11, 2019. https://www.gao.gov/assets/710/703114.pdf.
[14] FITARA Dashboard. MeriTalk. https://fitara.meritalk.com.
[15] FITARA Dashboard. MeriTalk. https://fitara.meritalk.com/.
[16] U.S. Government Accountability Office. "Data Center Optimization: Agencies Report Progress and Billions Saved, but OMB Needs to Improve Its Utilization Guidance." GAO-21-212, March 4, 2021. https://www.gao.gov/products/gao-21-212.
[17] U.S. Government Accountability Office. "Cloud Computing: Agencies Have Increased Usage and Realized Benefits, but Cost and Savings Data Need to Be Better Tracked." GAO-19-58, April 4, 2019. https://www.gao.gov/assets/700/698236.pdf.

$70 billion a year to operate and maintain existing IT. A substantial portion of that figure goes toward preserving legacy systems that are woefully outdated, many of which use decades-old programming languages or hardware and software that vendors no longer support. Some continue to operate even with known security vulnerabilities.

For example, at least six federal agencies currently use IT systems that are more than 35 years old. These aging IT systems are not just inefficient and insecure, they are also considerably more expensive for taxpayers as agencies often end up paying premiums to have staff or contractors who can operate them.[18]

A few of the more glaring examples include:

- Internal Revenue Service. Many IRS processes utilize a data source that is more than 50 years old, written in programming languages developed in the 1950s. While the IRS's documented modernization plans acknowledge the work necessary to modernize the system, they are short on details needed to map out a path to full replacement.[19]

- Department of Education. A 2017 report from the Department of Education's Inspector General identified several security weaknesses stemming from the department's use of obsolete operating systems, databases, and applications.[20] The relevant systems – which store extremely sensitive information, including the financial information for federal student loan applicants – were created in 1973 and utilize a programming language developed in 1959. As of mid-2019, DOE had no documented plans to modernize its legacy IT systems.[21]

- Federal Aviation Administration. According to a June 2019 GAO report, an FAA system that contains information on aircraft and pilots uses core components and mainframe applications that have been in operation since 1984. The system's software has not had vendor support for at least a decade. According to the most recent GAO report on legacy IT systems, the agency has no documented modernization plans.[22]

Put simply, overall federal IT modernization efforts prior to the pandemic were defined by noticeable progress in some major areas and maddening stagnation in others. The possibility of a major crisis continually threatened to expose major weaknesses in agencies' operations and response capabilities.

Much the same can be said about state governments. While states tend to have more flexibility and have been more willing to make investments to improve their IT, many still use outdated systems to fulfill critical government functions. In a 2018 study of 250 state IT systems, the Center for Digital Government found that more than half of the systems had been in operation for 17 years or longer, an eternity when it comes to technology upgrades. Roughly one-third of the systems analyzed in the study were deemed "unable to meet user demands."[23]

However, several states have made considerable investments in recent years to update their IT systems. Their successes demonstrate the importance of prioritizing IT modernization. Notable examples include:

---

[18] U.S. Government Accountability Office. "Information Technology: Agencies Need to Develop Modernization Plans for Critical Legacy Systems." GAO-19-471, June 11, 2019. https://www.gao.gov/products/GAO-19-471.
[19] GAO-19-471. June 11, 2019. https://www.gao.gov/products/GAO-19-471.
[20] Tighe, Kathleen S., Office of Inspector General, U.S. Department of Education. FY 2018 Management Challenges. November 2017. https://www2.ed.gov/about/offices/list/oig/misc/mgmtchall2018.pdf.
[21] GAO-19-471. June 11, 2019. https://www.gao.gov/products/GAO-19-471.
[22] GAO-19-471. June 11, 2019. https://www.gao.gov/products/GAO-19-471.
[23] "Data Suggests One-Third of State IT Systems are Old and Broken." Government Technology, March 19, 2018. https://www.govtech.com/biz/Data-Suggests-One-Third-of-State-IT-Systems-are-Old-and-Broken.html.

- The State of Arizona began a major overhaul of its legacy IT systems in 2015. By 2019, the state had cut its data center costs by 75 percent by migrating its IT infrastructure to the cloud.[24] It also consolidated more than 30 separate email platforms used by various state agencies into a single, cloud-based platform.[25] Arizona also more than quadrupled its online service offerings during that time.[26]

- The State of Oklahoma initiated an end-to-end modernization effort in 2013, focused mostly on consolidating its IT infrastructure into a single data center. This effort reduced Oklahoma's annual IT costs by $112 million and cut its IT staff nearly in half.[27]

- The State of Texas revamped its technology infrastructure starting in 2017, shifting from a departmental focus for IT purchases to a centralized, enterprise-level model. The consolidated purchasing program allowed the state to leverage state-wide demand volume in order to bring down costs and increase agility. As part of this effort, the state consolidated most of its data centers and accelerated migration to the cloud.[28]

- The State of Minnesota spent a decade developing and attempting to implement its Minnesota Licensing and Registration System (MNLARS), a project that was continually plagued by setbacks and cost overruns. In 2019, the governor's office announced that it would abandon the program and switch to a packaged, "off the shelf" software solution.[29] Despite some interruptions caused by the pandemic, the new system went online in November 2020, on time and within budget.[30]

Government IT and the Response to COVID-19

The COVID-19 pandemic presented unique challenges to government agencies across the board. In many ways, it has accelerated IT modernization efforts as governments have been forced to work quickly – with help from the private sector – to address immediate needs. While the overall results of these endeavors have been mixed, the crisis has, at the very least, made policymakers more aware of the benefits of modernization and, perhaps more important, the drawbacks of putting off updates to legacy systems.

Governments responded to the pandemic by expanding existing programs and creating many others, almost all of which increased agency workloads. Existing programs that provide economic benefits or assistance saw a massive influx of claims and applications, putting further strain on agency infrastructures. And, much like the private sector, government offices were forced to rapidly expand their teleworking capabilities to continue operations.

This added pressure exposed obvious weaknesses in some government IT systems. For example, the centerpiece of the federal government's initial response to the pandemic was the Coronavirus Aid, Relief, and Economic Security (CARES) Act which, among many other things, expanded and created new loan programs administered by the Small Business Administration (SBA). However, the SBA's loan program was not built to process the volume of loans the agency received. As a result, lenders

---

[24] AWS Case Study: State of Arizona. Amazon Web Services. https://aws.amazon.com/solutions/case-studies/state-of-arizona/.
[25] Kanowitz, Stephanie. "Arizona rides up to the G Suite cloud." *GCN*, June 11, 2019. https://gcn.com/articles/2019/06/11/arizona-google-cloud.aspx.
[26] Flynn, John Thomas. "Act of God inspires Arizona's move to cloud." *Federal News Network*, July 18, 2019. https://federalnewsnetwork.com/ask-the-cio-sled/2019/07/act-of-god-inspires-arizonas-move-to-cloud/.
[27] Dawson, Gregory S. "A Roadmap for IT Modernization in Government." IBM Center for The Business of Government. https://cio.nebraska.gov/news/docs/pdf/A_Roadmap_for_IT_Modernization_in_Government.pdf.
[28] Dawson, G. https://cio.nebraska.gov/news/docs/pdf/A_Roadmap_for_IT_Modernization_in_Government.pdf.
[29] Harrison, Lauren and Knell, Noelle. "Moving Away from MNLARS: A Smart, Future-Proof Pivot." Government Technology, October 25, 2019. https://www.govtech.com/people/Moving-Away-from-MNLARS-A-Smart-Future-Proof-Pivot.html.
[30] Minnesota Department of Public Safety. News Release: "New Vehicle Services System Launched and Operating." November 19, 2020. https://dps.mn.gov/divisions/ooc/news-releases/Pages/new-vehicle-services-system-launched-and-operating.aspx.

faced significant delays in accessing the system for new users that, according to GAO, hampered the implementation of SBA's newly expanded mission.[31] In addition, a bug in the SBA's application website exposed as many as 8,000 applicants' personal information.[32] However, by creating alternative applications processes, increasing system memory, and expanding the number of telecommunication lines, the SBA did eventually increase its capacity to adequately process new applications.[33]

As is often the case, IT concerns at the IRS have received a lot of attention during the pandemic. Under the CARES Act, the IRS was charged with disseminating Economic Impact Payments (EIPs) to taxpayers, starting in the spring of 2020. Due to technological shortfalls, the IRS encountered serious difficulties in delivering EIPs to taxpayers and keeping them informed of their status. For the most part, these problems continued when the second round of payments were distributed in December.[34]

One bright spot for the IRS during the pandemic has been the adaptability of private sector solutions developed beforehand. The standout example is the Free File system, a partnership between the IRS and private tax software providers that allows millions of taxpayers to file their returns online at no charge. Working with industry, the IRS was able to adapt the Free File platform to enable Americans who, for one reason or another, did not file a tax return in 2019 or 2020 but were eligible for CARES Act payments.[35]

But, all told, the IRS has a long road ahead of it to fully recover from the IT headaches caused by the pandemic. A recent GAO report expressed serious concerns about the Service's risk management efforts for the 2021 filing season. Just one startling finding was that the IRS had serious difficulties transitioning certain staff to telework. As of October 2020, "about one-third" of the returns processing staff remained on paid leave, essentially idle because their job functions (largely with paper returns) had not been adapted to accommodate remote work.[36]

The story of federal IT during the pandemic does have its bright spots. Several federal agencies were able to quickly ramp up their teleworking capabilities and continue their operations without major disruptions. Agency CIOs credited recent federal IT modernization efforts – particularly the adoption of cloud services – for these successes. Leaders at other agencies, including the National Science Foundation and the Defense Department, have specifically used this crisis as an opportunity to accelerate ongoing technology upgrades.[37]

Other federal departments and agencies took steps to quickly expand capacity in response to the pandemic. These include:

- The U.S. Digital Service (USDS) helped the Centers for Disease Control and Prevention (CDC) to quickly overhaul its website to better disseminate data on the spread of COVID-19.[38]

[31] U.S. Government Accountability Office. "Covid-19: Opportunities to Improve Federal Response and Recovery Efforts." GAO-20-625, June 25, 2020. https://www.gao.gov/products/gao-20-625.

[32] Vanian, Jonathan. "SBA website leaks personal data of 8,000 small-business loan applicants." *Fortune.com*, April 20, 2020. https://fortune.com/2020/04/21/sba-portal-data-breach-economic-injury-disaster-loan-eidl-small-business-administration-not-ppp-leak/.

[33] GAO-20-625. June 25, 2020. https://www.gao.gov/products/gao-20-625.

[34] Sepp, Pete. "Treasury Payment Snafus – Umpteenth Reason to Avoid 'Return-Free' Scheme." National Taxpayers Union, January 7, 2021. https://www.ntu.org/publications/detail/treasury-payment-snafus-umpteenth-reason-to-avoid-return-free-scheme.

[35] Internal Revenue Service. Press Release: "Treasury, IRS launch new tool to help non-filers register for Economic Impact Payments." April 10, 2020. https://www.irs.gov/newsroom/treasury-irs-launch-new-tool-to-help-non-filers-register-for-economic-impact-payments.

[36] U.S. Government Accountability Office. "Tax Filing: Actions Needed to Address Processing Delays and Risks to the 2021 Filing Season." GAO-21-251, March 1, 2021. https://www.gao.gov/products/GAO-21-251.

[37] Mitchell, Billy. "For federal CIOs, telework boom shows how existing IT investments pay off in new ways." *FedScoop*, April 22, 2020. https://www.fedscoop.com/federal-cios-telework-boom-shows-existing-investments-pay-off-new-ways/.

[38] Mitchell, Billy. "How the U.S. Digital Service is helping during the coronavirus pandemic." *FedScoop*, April 23, 2020. https://www.fedscoop.com/usds-digital-services-coronavirus-projects/.

- The U.S. Army moved forward to develop a new health information management system in the cloud in order to create "virtual critical care wards" that are meant to scale up existing telemedicine technology and link it with field hospitals.[39]

- The Veterans Affairs Department also accelerated its telehealth programs to remotely treat patients during the pandemic.[40]

- The Department of Energy used one of its labs to manage a coordinated effort to utilize super computers to produce and assess epidemiological models to better evaluate the spread of the COVID-19 virus.[41]

The pandemic also exposed some longstanding IT problems at the state level. Most notably, state labor and employment agencies throughout the country struggled to keep pace with record numbers of Unemployment Insurance (UI) claims. This was largely due to the continued use of outdated legacy systems that were simply unable to satisfy the dramatic increase in demand.

At the start of the pandemic, only 16 states had fully modernized their UI computer systems.[42] A report from the Information Technology and Innovation Foundation found that a majority of state UI websites performed poorly when accessed on a mobile device at the start of the pandemic.[43] And, at that same time, roughly one-fourth of state unemployment systems were still using COBOL – an Eisenhower-era programming language – in some capacity.[44] This was clearly problematic as COBOL-driven systems are largely outdated and very few COBOL-trained technicians are still in the workforce. The pandemic had some states scrambling to bring fluent coders out of retirement to try to keep pace with unemployment claims.[45]

In the first weeks of the crisis, as jobless numbers began to skyrocket, online systems for processing unemployment claims crashed in more than half the states.[46] As a result, unemployment applicants across the country faced major delays in receiving their benefits. According to the Century Foundation, a progressive think tank, states had only paid on 14 percent of unemployment claims at the end of March 2020.[47] Payment rates nationwide increased significantly in the ensuing months. From March through July, states had collectively paid 54 percent of unemployment claims.[48] However, the performance of individual state systems varied significantly.

For example, due to various technology failures, more than 100,000 people in Hawaii experienced weeks-long delays in benefit payments during the first two months of the pandemic.[49] By mid-July, Wisconsin

[39] Barnett, Jackson. "Army wants help with virtual critical-care services in COVID-19 field hospitals." *FedScoop*, March 31, 2020. https://www.fedscoop.com/tele-critical-care-netccn-army-coronavirus/.

[40] Veterans Health Administration, Office of Emergency Management. Covid-19 Response Plan. "Incident-specific Annex to the VHA High Consequence Infection (HCI) Base Plan," March 23, 2020. https://www.va.gov/opa/docs/VHA_COVID_19_03232020_vF_1.pdf.

[41] Vincent, Brandi. "Argonne Taps Supercomputing Network to Study How Coronavirus Spreads." NextGov, April 2, 2020. https://www.nextgov.com/emerging-tech/2020/04/argonne-taps-supercomputing-network-study-how-coronavirus-spreads/164282/.

[42] Dixon, Rebecca. "From Disrepair to Transformation: How to Revive Unemployment Insurance Information Technology and Infrastructure." National Employment Law Project, Testimony before the U.S. House of Representatives Committee on the Budget, July 15, 2020. https://www.nelp.org/publication/from-disrepair-to-transformation-how-to-revive-unemployment-insurance-information-technology-infrastructure/.

[43] McLaughlin, Michael and Castro, Daniel. "Most State Unemployment Websites Fail Mobile and Accessibility Tests." Information Technology & Innovation Foundation, April 15, 2020. https://itif.org/publications/2020/04/15/most-state-unemployment-websites-fail-mobile-and-accessibility-tests.

[44] Makena, Kelly. "Unemployment Checks are Being Held Up by a Coding Language Almost Nobody Knows." *The Verge*, April 14, 2020. https://www.theverge.com/2020/4/14/21219561/coronavirus-pandemic-unemployment-systems-cobol-legacy-software-infrastructure.

[45] Goldstein, Phil. "How States Should Address Legacy IT in a Crisis." *StateTech*, April 23, 2020. https://statetechmagazine.com/article/2020/04/how-states-should-address-legacy-it-crisis.

[46] McLaughlin and Castro. April 15, 2020. https://itif.org/publications/2020/04/15/most-state-unemployment-websites-fail-mobile-and-accessibility-tests.

[47] Stettner, Andrew and Novello, Amanda. "Unemployment Payments Accelerated in April and May – but Are Still Too Slow." The Century Foundation, June 2, 2020. unemployment-payouts_finalPDF.pdf (imgix.net)

[48] Stettner, Andrew and Novello, Amanda. "Unemployment Payouts Accelerated during April and May—but Are Still Too Slow." The Century Foundation, June 2, 2020. https://tcf.org/content/report/unemployment-insurance-data-dashboard/.

[49] Hofschneider, Anita. "The Long Wait For Unemployment Checks Is Taking A Personal Toll." *Honolulu Civil Beat*, May 5, 2020. https://www.civilbeat.org/2020/05/the-long-wait-for-unemployment-checks-is-taking-a-personal-toll/.

had a backlog of 140,000 unpaid claims.[50] Unemployed Kentucky residents reported waiting as long as three months to receive their first unemployment checks.[51] In September, the State of California announced a temporary pause on unemployment claims as their system's backlog approached 600,000 claimants, all of whom had waited longer than three weeks for their initial claims to be processed. Like many other states, California's UI system had been hampered by outdated technology and was unable to keep pace with a rapid rise in demand for benefits.[52]

Preexisting tech problems and poor oversight likewise increased the amount of improper payouts of benefits. In late January California's Employment Development Department reported that at least $11.4 billion, or roughly 10 percent, of all unemployment claims paid by the state in 2020 were lost to fraud.[53]

Impact of COVID-19 Pandemic on State IT	
States where UI websites crashed due to increased claims:	
Alabama	Mississippi
Arizona	Missouri
Arkansas	Montana
Colorado	Nevada
Connecticut	New Jersey
Florida	New York
Hawaii	North Carolina
Illinois	Ohio
Iowa	Oregon
Kentucky	Texas
Louisiana	Virginia
Maryland	West Virginia
Michigan	Wisconsin

The problems are by no means confined to California, however – even several states' governors were victims of fraudulent claims amounting to tens of billions of dollars nationwide.[54]

Not surprisingly, the problems caused by outdated state government IT during the pandemic have extended beyond Unemployment Insurance. For example, in addition to its UI problems, a computer problem in California's Department of Health Care Services mistakenly terminated or reduced health insurance benefits for about 200,000 low-income residents enrolled in the state's Medi-Cal program. The governor announced a change in policy to ensure continued coverage during the pandemic, but the outdated computer system didn't have the capability to stop automated policy cancellations.[55]

[50] "Wisconsin Democrats propose plan to alleviate backlog in processing of unemployment." *KSTP News*, July 16, 2020. https://kstp.com/minnesota-news/wisconsin-democrats-propose-plan-to-alleviate-backlog-in-processing-of-unemployment-/5796265/.

[51] Barton, Ryland. "Kentucky Still Struggling With Unemployment Backlog." *WFPL News*, July 1, 2020 https://wfpl.org/kentucky-still-struggling-with-unemployment-backlog/.

[52] Salahieh, Nouran and Telles, Megan. "California is pausing unemployment claims for 2 weeks." *KTLA News*, September 20, 2020. https://ktla.com/news/california/california-to-pause-unemployment-claims-for-2-weeks/#:~:text=Officials%20say%20California%20will%20not,statewide%20during%20the%20coronavirus%20pandemic.

[53] McGreevy, Patrick. "California officials say unemployment fraud now totals more than $11 billion." *Los Angeles Times*, January 25, 2021. https://www.latimes.com/california/story/2021-01-25/california-unemployment-fraud-11-billion-investigations.

[54] Lonas, Lexi. "Reports of unemployment fraud increase as states mail out tax forms." *The Hill*, February 5, 2021. https://thehill.com/policy/finance/537517-reports-of-unemployment-fraud-increase-as-states-mail-out-tax-forms.

[55] Ibarra, Ana B. "Pandemic snafu: State mistakenly drops Medi-Cal coverage for some low-income Californians." *Cal Matters*, August 11, 2020. https://calmatters.org/health/2020/08/pandemic-drops-medical-coverage/.

In response to these system failures, some states opted to simply purchase new equipment and hire new workers to support their already outdated infrastructure. For example, after its UI application website repeatedly crashed, the State of Florida spent $119 million for new servers and expanded call center capacity in order to shore up its existing system.[56] California, though acknowledging that its UI system relied on "aging and inflexible" components, responded to its tech crisis by hiring thousands of new workers to process claims under the old system.[57]

Other states took immediate action to upgrade their legacy systems. For instance, state officials in Rhode Island, working with private partners, designed, configured, and implemented an all-new UI system to replace its COBOL-driven legacy system in just 10 days.[58]

Ultimately, the performance of government IT during the pandemic has been something of a mixed bag. As with federal agencies, states that had made significant IT investments prior to the pandemic were, broadly speaking, better equipped to respond to its challenges.

Where Do We Go from Here?

As the U.S. (hopefully) begins to move on from the pandemic and look toward the future, it is essential that policymakers internalize the lessons learned in 2020. They must take meaningful steps both to modernize IT systems in the near term and allow for continued innovation and improvements going forward. By using the tools already at their disposal, along with a handful of structural and managerial changes, the federal and state governments can build on recent progress and put themselves in a better position to make lasting improvements to their IT systems.

Funding & MGT Act Issues

For many advocates and stakeholders, the effort to modernize government IT begins – and sometimes ends – with increased funding. This is not surprising. Governments at all levels in the U.S. have been accumulating IT investment shortfalls for decades. Comparing data from the Bureau of Economic Analysis, the Progressive Policy Institute recently confirmed that federal and state government investment in software – considered on a per-worker basis – lags far behind that of the private sector.[59]

Congress attempted to partially address these funding shortfalls in 2017 with passage of the MGT Act. However, thus far, the Technology Modernization Fund established under the act has awarded only about $116 million – just a drop in the federal IT spending bucket – to ten agency modernization projects and hasn't garnered the bipartisan support needed for more robust funding.[60] It is worth noting that, despite its many flaws, the 2021 COVID relief package – which President Biden signed on March 11 – did include $1 billion in TMF funding, which is a significant increase from previous years and more in line with the amounts authorized in the original legislation.[61]

Another key feature of the MGT Act was the authorization for agencies to set aside savings and leftover funding in other areas in a working capital fund for future IT modernization projects. These funds

[56] DeForest, Mike. "Florida spent $25 million in 2 weeks boosting system for unemployment benefits." *News 6 Orlando*, April 3, 2020. https://www.clickorlando.com/news/local/2020/04/04/florida-spent-25-million-in-2-weeks-boosting-system-for-unemployment-benefits/.

[57] Lightman, David. "Hiring sprees and unending IT problems: What California budgets say about unemployment agency." *Sacramento Bee*, September 30, 2020. https://www.sacbee.com/news/politics-government/capitol-alert/article246104965.html.

[58] "The Cloud Helps Rhode Island Manage an Unprecedented Surge in UI Claims." *Governing*, April 24, 2020 (sponsored). https://www.governing.com/work/Cloud-Helps-Rhode-Island-Manage-an-Unprecedented-Surge-in-UI-Claims.html.

[59] Stapp, Alec; Mandel, Michael; and Long, Elliot. "What it Takes: Modernizing Government IT to Meet 21st Century Challenges." Progressive Policy Institute, September 25, 2020. https://progressivepolicy.org/publication/what-it-takes-modernizing-government-it-to-meet-21st-century-challenges/.

[60] Mayo, Josh. "TMF Funding Stuck at $25M in Senate FY2021 Approps Bill." *MeriTalk*, November 10, 2020. https://www.meritalk.com/articles/tmf-funding-stuck-at-25m-in-senate-fy2021-approps-bill/.

[61] Ogrysko, Nicole. "Congress secures more paid leave for federal employees in new COVID-19 relief law." *Federal News Network*, March 11, 2020. https://federalnewsnetwork.com/benefits/2021/03/congress-secures-more-paid-leave-for-federal-employees-in-newly-passed-covid-19-relief-bill/.

have obvious potential benefits, including the possibility of increasing IT investments without adding to agency budgets and the ability to plan IT investments over multiple years. However, to date, about half the eligible federal agencies have yet to take the necessary steps to establish working capital funds. And generally speaking, congressional appropriators have been hesitant to grant agencies the necessary authorities to repurpose the funds placed in these accounts.[62] Thus far, the Small Business Administration is the only agency that has been granted such authority by Congress. In 2019, SBA used the funds to accelerate its cloud migration. Two others have utilized previously existing working capital funds that satisfied the requirements of the MGT Act funds. Several other agencies have requested authority in recent years without receiving approval.[63]

So while the MGT Act included some innovative policies to help federal agencies modernize their IT and replace outdated systems, Congress has been hesitant to actually invest in these ideas, and agencies haven't fully embraced them. Better use of and increased funding for programs established under the MGT Act is one way the government could make its IT investments more efficient and cost-effective.

But, in the end, focusing solely on funding for modernization glosses over the need for fundamental changes in the way governments approach IT, particularly at the federal level. To be clear, making serious improvements to their IT will likely require governments to up their investments. However, elected leaders should also take the necessary steps to ensure future IT investments go toward real improvements.

Structural & Managerial Reforms

Broadly speaking, governments need to ensure that IT improvement decisions are not weighed down by bureaucracy and siloed authorities. This will require agencies to clearly define who has the authority to make IT decisions and the processes by which those decisions are made. Various studies of private sector management structures suggest that stronger decision-making authority for a company's CIO increases the contribution of IT to the company's overall performance.[64] Others have concluded that, in companies that elevate the CIO to report directly to the CEO, IT performance is far more likely to serve as a strategic differentiator.[65]

Research also indicates that state-level IT investments result in greater savings and value when a CIO position is formally codified in law, rather than executive order. A study by Min-Seok Pang of Temple University determined that, in states with a legislatively established CIO, every dollar in the CIO's budget saved the government an average of $5.10. Those savings were usually enhanced in states where the CIO is confirmed by the legislature. When the powers of the CIO are not laid out in statutes, the state's average return on investment is slightly negative. Ultimately, this suggests that for a state to maximize the value of its IT investments, its CIO should be formally empowered to make decisions about IT management throughout the state.[66] Such was the case with Rhode Island, which likely helps explain how its rapid UI system upgrades in response to the pandemic were possible.

While these findings present a potential roadmap for IT reforms at the state level, the federal government is an entirely different animal. At the federal level, IT policies and decision-making authority are

[62] Miller, Jason. "CIO reporting, working capital funds remain outliers in agency IT modernization progress." *Federal News Network*, August 4, 2020. https://federalnewsnetwork.com/congress/2020/08/cio-reporting-working-capital-funds-remain-outliers-in-agency-it-modernization-progress/.

[63] Heckman, Jory. "SBA wraps up CDM pilot as part of enterprise IT transformation." *Federal News Network*, September 23, 2019. https://federalnewsnetwork.com/security-strategies-in-government/2019/09/sba-wraps-up-cdm-pilot-with-dhs-aas-part-of-enterprise-it-transformation/.

[64] See, e.g., Preston, David S., Chen, Daniel, and Leidner, Dorothy E. "Examining the Antecedents and Consequences of CIO Strategic Decision Making Authority: An Empirical Study." *Decision Sciences*, Vol. 39, Issue #4. https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-5915.2008.00206.x.

[65] Banker, Rajiv; Hu, Nan; Pavlou, Paul; and Luftman, Jerry. "CIO Reporting Structure, Strategic Positioning, and Firm Performance." *MIS Quarterly*, 35:2 (2011). https://misq.org/cio-reporting-structure-strategic-positioning-and-firm-performance.html.

[66] Pang, Min-Seok. Is Government IT Spending Worth It?" Institute for Information Technology, October 2015. https://ibit.temple.edu/wp-content/uploads/2015/10/IBITReport_IsITWorthIT2015.pdf.

dispersed and fragmented across several agencies, including GSA, OMB, and others. Numerous statutes and executive initiatives have sought to streamline authority and shorten chains of command for IT decisions. However, most of those efforts have not been aimed at consolidating authority and accountability across the entire government or strengthening the role of the US CIO.

For example, FITARA and other statutes assign 35 separate IT management responsibilities to agency CIOs.[67] Various executive orders, including one signed by then-President Trump in May 2018, have been issued to enhance the role of agency CIOs in order to simplify decision-making and increase accountability for IT improvements.[68] These are steps in the right direction. However, in December 2019, GAO concluded that despite notable progress in some cases, none of the covered agencies had fully addressed the role of their CIO to the extent required by applicable laws and guidance. This finding was reiterated in August 2020.[69]

To address this problem, Pang suggests creating a separate federal agency – with a Senate-confirmed federal CIO – to assume greater control of IT modernization and cybersecurity efforts across the entire government.[70] Of course many will be hesitant – for good reason – to create yet another federal agency, even if its stated purpose is to lower costs and increase efficiency. Still, the evidence from both the private sector and state governments overwhelmingly recommends consolidating IT responsibilities for the entire federal government and removing the barriers that come with agency turf wars and bureaucratic overhead. Rather than creating an all-new agency, Congress should consider formally defining a centralized, government-wide IT leadership role in an existing office.

Efforts to replace antiquated technology are also slowed by procurement processes that are even more outdated. Despite recent efforts to reform government acquisition, officials are still often risk averse when it comes to investing in innovative technologies. As SAIC's Lakshmi Ashok recently observed, "[N]o one wants to be the next poster child for wasteful spending or procurement violations."

The Trump Administration took some steps to address these problems. For example, it made "frictionless acquisition" a Cross-Agency Priority Goal,[71] and piloted e-commerce marketplaces run by private companies to allow agencies to purchase commercial off-the-shelf products under statutory cost thresholds. Testing on these platforms is expected to last at least through 2021.[72] These are positive developments, but the Biden administration must do more to give federal agencies the acquisition authority necessary to build and continually update modernized IT platforms.

Other policy changes that could help maximize the return on IT investments include enhanced workforce training and improved hiring practices to ensure new technologies can be implemented seamlessly. In addition, agencies need to be ready to shift priorities and apply new metrics. For example, numerous agencies are putting their focus toward improving the "customer experience"[73] of citizens interacting with government and are designing new platforms for that purpose. And, agencies must be willing to follow through on the plans to increase the use of artificial intelligence (AI) and process automation so employees can focus more on higher-value work and less on mundane, repetitive tasks.[74] These

[67] GAO-20-311T, December 11, 2019. https://www.gao.gov/assets/710/703114.pdf.

[68] Executive Order 13833. 83 FR 23345. May 15, 2018. https://www.federalregister.gov/documents/2018/05/18/2018-10855/enhancing-the-effectiveness-of-agency-chief-information-officers.

[69] U.S. Government Accountability Office. "Information Technology: Federal Agencies and OMB Need to Continue to Improve Management and Cybersecurity." GAO-20-691T, August 3, 2020. https://www.gao.gov/products/gao-20-691t.

[70] Pang, Min-Seok. "The case for a federal department of IT." *FCW*, April 8, 2019. https://fcw.com/articles/2019/04/08/comment-department-of-it.aspx

[71] Miller, Jason. "Frictionless acquisition means changing hearts and minds, not necessarily processes." *Federal News Network*, July 28, 2020. https://federalnewsnetwork.com/acquisition-policy/2020/07/frictionless-acquisition-means-changing-hearts-and-minds-not-necessarily-processes/.

[72] Black, David S, et. al. "2020 Trends & Developments in U.S. Public Procurement and Government Contracts." Holland and Knight, April 6, 2020. https://www.hklaw.com/en/insights/publications/2020/04/2020-trends-in-us-public-procurement-and-government-contracts.

[73] "Improving Customer Experience with Federal Services." President's Management Agenda, Performance.gov, December 2019. https://trumpadministration.archives.performance.gov/CAP/action_plans/dec_2019_Improving_Customer_Experience.pdf.

[74] "Shifting from Low-Value to High Value Work." President's Management Agenda, Performance.gov, December 2019. https://www.trumpadministration.archives.performance.gov/CAP/action_plans/dec_2019_Low-Value_to_High-Value_Work_UpdatedVersion.pdf.

objectives have benefited companies in the private sector for years. Government at all levels should look to implement them wherever it is feasible.

New Approaches to Technology

In addition to much-needed structural changes, policymakers need to update their thinking when it comes to IT modernization. As John Goodman and Ira Entis of Accenture Federal Services recently noted, government agencies must "begin to view IT as a foundational investment in their future mission performance rather than a line item business expense."[75] Technological advances happen quickly; governments should be looking to benefit from new technologies as they become available. Ultimately, that means adopting systems and platforms that are more open, flexible, and scalable.

Several key federal agencies – as well as many state governments – have already taken important steps toward this goal by accelerating their adoption of cloud services. At the federal level, cloud spending has increased steadily over the past six years, reaching $6.6 billion in FY2020.[76] Migration to the cloud has been the focal point of multiple legislative and administrative initiatives because leaders have recognized the potential for improvements in efficiency, security, and flexibility that come with increased use of commercial cloud services.

It's worth noting that NTU has been urging federal agencies to make cloud migration a priority for the better part of a decade, both as a means of procurement modernization[77] and deficit reduction.[78] Going forward, governments should continue to prioritize investments in the cloud. In addition to cutting costs, increased use of cloud options will allow agencies to keep pace with cutting edge technologies like artificial intelligence and improve their web- and mobile-based service offerings.

Looking beyond cloud migration, various open-source initiatives also have the potential to advance IT modernization efforts. In the waning days of the Obama Administration, the White House announced a new Federal Source Code Policy that required source code developed specifically by or for a federal agency to be made available for government-wide sharing and re-use. The goal was to decrease duplicative software costs and reduce vendor lock-in. The policy also required federal agencies to share 20 percent of their custom source code with the public, allowing outside developers to contribute to government software projects and letting taxpayers repurpose the code they've paid for.[79] By most accounts, the Trump administration was less forward leaning on the policy. By the end of President Trump's term, only a handful of federal agencies had achieved full compliance.[80]

Much the same could be said for open data policies. In addition to increased transparency and accountability, requiring government agencies to publicize non-sensitive data increases the value of information and can help promote progress and innovation. For example, publicizing government data can lower barriers to entry for parties without extensive resources – academic institutions, non-profits, and private companies – by allowing them to repurpose official data to develop new applications. Toward those ends, President Trump signed into law the OPEN Government Data Act, which codified various open data efforts by requiring federal agencies to release all non-sensitive data to the public

[75] Goodman, John and Entis, Ira. "The Pandemic is Turbo-Charging Government Innovation: Will it Stick?" *Knowledge@Wharton*, May 15, 2020. https://knowledge.wharton.upenn.edu/article/pandemic-turbo-charging-government-innovation-will-stick/.

[76] Konkel, Frank. "Federal Cloud Spending Tops $6.6 Billion." *Nextgov*, February 4, 2021. https://www.nextgov.com/it-modernization/2021/02/federal-cloud-spending-tops-66-billion/171865/.

[77] Sepp, Pete. "NTU Writes Letter to House Armed Services Committee Regarding DOD's Cloud Computing Contract." National Taxpayers Union, May 10, 2018. https://www.ntu.org/publications/detail/ntu-writes-letter-to-house-armed-services-committee-regarding-dods-cloud-computing-contract.

[78] "Toward Common Ground: Bridging the Political Divide with Deficit Reduction Recommendations for the Super Committee." National Taxpayers Union Foundation and U.S. Public Interest Research Group, September 2011. https://www.ntu.org/library/doclib/ntu-pirg-toward-common-ground-2011-1.pdf.

[79] Executive Office of the President. Memorandum for the Heads of Departments and Agencies, August 8, 2016. https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/memoranda/2016/m_16_21.pdf.

[80] U.S. General Services Administration. Code.gov Agency Compliance. https://code.gov/federal-agencies/compliance/dashboard.

and prohibiting restrictions on the use such data.[81] However, GAO recently noted that, as of October 2020, OMB had not issued the required guidance to help agencies implement the law. It has also not met the law's requirements to publicly report on agencies' performance and compliance with the statute.[82] As a result, it is not currently clear whether the OPEN Government Data Act has been all that successful in achieving its proposed aims.

Going forward, the Biden administration should prioritize increasing agency participation in open source and data initiatives. Some observers have suggested changes to the Federal Source Code Policy that could leverage greater participation and increase the utility of the program, including adopting a "default to open" policy that would essentially make all custom government code open except in particular cases. Several other countries – most notably the UK – have met with success using a similar approach.[83] On open data, the administration should, at a minimum, endeavor to meet the demands of the law by issuing the required guidance and establishing policies to ensure data is made public in a timely manner. The administration should also look for ways to better integrate the federal government's efforts with those of the 48 states that currently submit data sets to the federal online repository.[84]

Conclusion

In many ways, the COVID-19 pandemic has highlighted and even exacerbated existing government IT problems at both the state and federal levels. Observers, industry experts, and informed policymakers spent years warning the public of the risks of allowing vital government operations to be performed on obsolete systems. Yet, the service failures in the first weeks of the pandemic may have done more to demonstrate the problems than all those efforts combined. Fortunately, the successes of some governments and agencies can serve as examples for how modernization efforts should progress in the future.

In 2021, the US has inaugurated a new president, a new Congress has convened, and the legislatures in most states have assembled for the first time following what has been a very contentious election year. Yet, the COVID pandemic still dominates the political and policy discussion. Empowering states and the federal government to make necessary IT improvements should be part of that discussion. And, in the aftermath of a divisive campaign season, with Democrats and Republicans nationwide hopefully looking for areas of common ground, replacing obsolete systems and making government agencies more agile and adaptable to technological advancements could be just what our leaders – and, more important, the taxpayers who elected them – are looking for.

About the Author

Bryan Hickman is a Policy Fellow with National Taxpayers Union. He is a writer and communications professional with an extensive policy background developed over nearly 14 years working on Capitol Hill, including multi-year stints on the Senate Finance and Judiciary Committees. His credentials include a J.D. from The George Washington University Law School and B.S. and M.S. degrees in political science from Utah State University.

[81] Corrigan, Jack. "Open Federal Data is Now the Law of the Land." *Nextgov*, January 15, 2019. https://www.nextgov.com/analytics-data/2019/01/open-federal-data-now-law-land/154181/.

[82] U.S. Government Accountability Office. "Open Data: Agencies Need Guidance to Establish Comprehensive Data Inventories; Information on Their Progress is Limited." GAO-21-29, October 8, 2020. https://www.gao.gov/products/GAO-21-29.

[83] Rashbass, Jake and Robertson, Mairi. "The People's Code: An analysis of public engagement with the US Federal Government's Open Source Pilot Program." John F. Kennedy School of Government, Harvard, April 2019. https://ash.harvard.edu/files/ash/files/20190506_pae_final_ash.pdf.

[84] Data.gov. Open Data in the United States. https://www.data.gov/open-gov/.