

Maximizing Cost Savings:

Unleashing the Value of Federal IT Modernization



U.S. Chamber of Commerce
Technology
Engagement Center

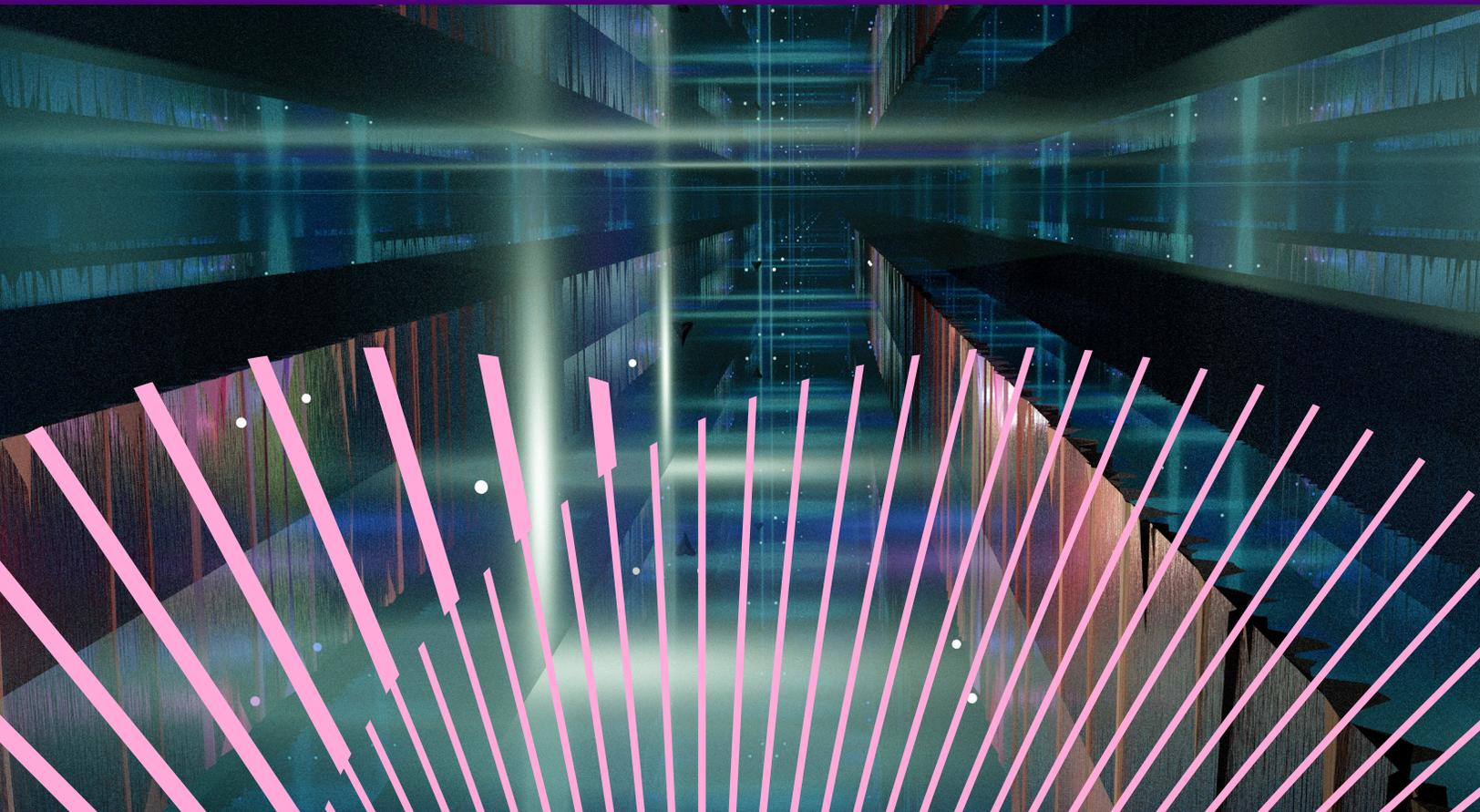


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Executive Summary

This paper highlights the significance of federal IT spending as a core strategic investment for every federal agency in the digital age. It emphasizes that IT spending is not merely an expense but a vital investment that empowers agencies to modernize infrastructure, enhance citizen services, improve national security, and foster innovation.

With nearly 4,500 active IT projects in the U.S. federal government, it is critical to reflect on how these investments will contribute to the nation's digital future.¹ Recent events, such as the Federal Aviation Administration's Notice to Air Mission (NOTAM) challenges, highlight how IT system modernization is not an abstract goal but rather something that can positively impact individuals' lives today.

While the reliability and efficiency benefits that come from IT system modernization is a notable and significant part of the digital transformation equation, the rising costs of legacy IT systems is further justification for upgrading antiquated structures. Legacy IT systems pose a long-term financial risk, as some agencies spend approximately 80% of their IT budget on maintenance.² However, IT modernization can provide long-term cost savings and efficiencies, demonstrated through the following eight cases.

1. 2020 Census Online at the U.S. Census Bureau

The bureau launched the first nationwide online census through a website that significantly improves the user experience, which saved the agency \$1.9 billion and made participation safer during the COVID-19 pandemic.³

2. Customs Modernization at the Department of Homeland Security

The department saved \$30 million a year in operations and maintenance costs by migrating to a cloud-based platform.⁴ Modernized key workflow processes, including payments to improve security and the user experience, supported critical COVID-19 responses.

3. Specialty Crops Inspection at the Department of Agriculture

Modernized critical back-office processes resulted in reduced food waste and spillage. This yielded annual savings of approximately \$1.72 million in operations and maintenance expenses.⁵

1. [ITDashboard.gov](https://itdashboard.gov), itdashboard.gov/itportfoliodashboard.

2. U.S. Government Accountability Office, "Agencies Need to Continue Addressing Critical Legacy Systems."

3. U.S. Government Accountability Office, *2020 Census: A More Complete Lessons Learned Process for Cost and Schedule Would Help the Next Decennial*

4. Technology Modernization Fund, "U.S. Customs and Border Protection (CBP) Collection System Modernization."

5. Technology Modernization Fund, "USDA Specialty Crops Inspection."



Cost savings were achieved through the elimination of manual processes, which reduced the need for manual data entry and documentation for farmers, small business owners, and consumers.

4. Cloud Email Migration at the Department of Energy

By consolidating on-premises email environments and migrating 225,853 mailboxes to the cloud, the Department of Energy eliminated wasteful spending on maintaining 64 separate email systems.⁶

5. Labor Certificate Modernization at the Department of Labor

The Department of Labor saved \$2 million annually in supplies and labor expenses while increasing the issuance of H-2A certifications by 176% and H-2B certifications by 109% in a single day.⁷ A cloud-based system enabled interagency sharing and improved data management.

6. Recreation.gov at the Department of Interior

Improved user experiences resulted in approximately 9 million online transactions, more than 1.55 million mobile app downloads, and 4.25 million camping reservations in FY 2021 alone.⁸ This was enabled by a successful public-private partnership without government funds.

7. Mainframe to Cloud Migration at the Department of Housing and Urban Development

An estimated annual savings of \$8 million was achieved by decommissioning the legacy mainframe. This supported 30,000 users across more than 100 Housing and Urban Development grant, subsidy, and loan programs and disbursed \$27 billion annually.⁹

8. Digital Modernization at U.S. State and Local Government (using federal pandemic relief funds)

Federal funds, distributed through state and local agencies, modernized IT systems to improve digital delivery, reduce fraud, and increase cost savings.

Across these eight distinct case studies emerge common themes around the power of embracing IT modernization, optimizing operations, and delivering citizen-centric services in the digital era. Although the scale of the projects varies, the highlighted cost savings cover a large range, from \$1.72 million (Department of Agriculture) to \$1.9 billion (U.S. Census Bureau). Whether big or small, the projects' ingenuity and innovation provide inspiration for how IT modernization partnerships between the public and private sector can help agencies execute their mission and decrease the cost burden for the taxpayer.

6. Vendor-provided figures.

7. Technology Modernization Fund, "[Department of Labor Certifications Experience.](#)"

8. Booz Allen Hamilton, "[Reinventing the Recreation.gov Customer Experience.](#)"

9. Federal News Network, "[Department of Housing and Urban Development: Mainframe Migration.](#)"

Federal IT Spending Is a Core Strategic Investment for Every Federal Agency

In today's digital age, federal IT spending is not just an expense—it is a pressing and strategic investment that empowers every federal agency to thrive and be accountable to citizens. It is the lifeblood of agency operations, citizen services, and innovation. As such, Congress must seize the opportunity to embrace IT modernization as a fundamental pillar of its strategic vision.

Federal IT investments are the key to modernizing infrastructure, revolutionizing digital delivery of services, and bolstering national security. Investments enable seamless communication and collaboration between agencies, empower data-driven decision-making through advanced analytics, and create user-friendly digital platforms to enhance citizen services. Government agencies must provide services to everyone, including all demographics, making the design and requirements that much more complex. Following are some of the most well-known federal IT services that underwent modernizations (or were developed) in the past 20 years:

Internal Revenue Service (IRS)

Taxpayers use the IRS's online services to check their refund status, make payments, or submit tax returns electronically through e-file and private sector entities that file directly with the government. The IRS website had an astounding 5.3 billion page views in FY 2022.¹⁰ The IRS, along with private sector vendors, also offers E-Services, a suite of web-based tools that allows tax professionals, reporting agents, mortgage industry representatives, payers, and others to complete transactions online.

Social Security Administration (SSA)

SSA offers an online portal where individuals can check their Social Security benefits, request a replacement Social Security card, or manage their retirement and disability benefits. More than 180 million people visit the SSA website every year.¹¹

10. Internal Revenue Service, "2022 Internal Revenue Service Data Book."

11. U.S. Social Security Administration, "Celebrating 88 Years of Social Security."

U.S. Postal Service (USPS)

USPS provides a range of online services, including package tracking, mail forwarding requests, and hold-mail services. For small businesses, USPS offers affordable rates through its online Click-N-Ship experience as well as tools to help with direct-mail marketing and shipping.

USAJobs

The U.S. federal government's official employment site is where job seekers can search and apply for federal jobs. The online portal also allows users to save their favorite jobs and searches and to upload their resumes and make them searchable.

Free Application for Federal Student Aid

This online portal is essential for students seeking financial aid for college. The online interface enables students to complete the financial aid form, renew the form and get help with submission, estimate financial aid, and simulate loan options.

Transportation Security Administration (TSA) PreCheck and Global Entry

U.S. travelers use these services to expedite security and customs screening processes when flying or returning to the United States. In 2023, the number of travelers eligible to use TSA PreCheck lanes hit 32 million, roughly 10 years after the program's launch.¹² The online application portion can be completed in five minutes or less. TSA has also partnered with companies like Staples and H&R Block to offer the in-person portion of the process in the store, which also brings more foot traffic into the businesses.

U.S. Passport Application and Renewal Services

Although the entire process cannot be completed online because of the need for physical documentation, many steps, including form downloads and fee payments, can be completed digitally. In August 2022, an online passport renewal option was made available to the public, and more than half a million customers have successfully submitted an application using the pilot online passport renewal program.¹³

Federal IT investments drive innovation, streamlines government operations through automation, and paves the way for a digital transformation across agencies. Accenture estimates that the return of the U.S. government's artificial intelligence investments could be enormous: productivity gains worth up to \$532 billion annually by 2028.¹⁴ These investments are also crucial for safeguarding sensitive data, optimizing public service delivery, and facilitating data-driven decision-making to tackle challenges and seize opportunities effectively. In the face of evolving threats, these investments fortify cybersecurity measures, support defense and military operations, and improve emergency response and disaster management efforts.

To safeguard the nation's progress and to ensure seamless service to the American public, federal agencies can prioritize and allocate resources to IT initiatives in this digital era. Doing so will improve their ability to adapt, thrive, and deliver citizen-centric solutions effectively.

12. Transportation Security Administration, "[TSA PreCheck® Sets New Active Membership Record.](#)"

13. Federal News Network, "[State Dept Surges Hiring Amid 'Historically High' Demand for Passports to Drive Down Wait Times.](#)"

14. Accenture, "[The Coming AI Productivity Boom.](#)"



The Challenge: Rising Costs of Legacy IT Systems

Federal legacy IT systems pose a growing financial burden because of increasing maintenance costs over time. Each year, the federal government spends more than \$100 billion on IT and cyber-related investments.¹⁵ Of this amount, agencies have typically reported spending about 80% on the operations and maintenance of existing IT investments, including legacy systems.¹⁶ These aging systems require extensive resources to maintain and support and often involve complex configurations, outdated software, and limited vendor support.



Skills Gap

As legacy systems age, the pool of professionals with specialized knowledge of those systems and their underlying languages shrinks. Therefore, finding the talent to maintain legacy systems comes with a premium. Since 2001, the U.S. Government Accountability Office (GAO) has included strategic human capital management in its High-Risk List for the Federal Government.¹⁷ According to GAO, mission-critical skill gaps in the federal government pose a high risk to the nation because they impede the government from cost-effectively serving the public and achieving results.¹⁸ Attracting and retaining IT talent are even more pronounced: only one under-30 IT specialist works in agencies for every four who are more than 60 years old.¹⁹ A recent Association for Talent Development survey of U.S. federal chief information officers found that 32% of respondents agreed that a deepening IT skills gap had a significant impact on their agency's ability to deliver services effectively.²⁰

15. U.S. Government Accountability Office, "[Agencies Need to Continue Addressing Critical Legacy Systems.](#)"

16. Ibid.

17. U.S. Government Accountability Office, "[High-Risk Series 2023.](#)"

18. Ibid.

19. NextGov, "[The Government's Struggle to Hire Young Tech Talent is Worse Than You Thought.](#)"

20. Association for Talent Development, "[How Federal Government Can Harness the Power of Their Existing Talent.](#)"





Hiring Costs

To operate and maintain legacy systems, staff may need experience with older technology and programming languages, such as the Common Business-Oriented Language (COBOL) developed in 1959. Agencies have had difficulty finding employees with such knowledge and may have to pay a premium for specialized staff or contractors as this group approaches and passes retirement age. For example, GAO reported that the SSA had to rehire retired employees to maintain its COBOL system.²¹ In another instance, the IRS had shortages of staff with the skills to support key tax processing systems that used legacy programming languages.²² The Society for Human Resource Management reports that many employers estimate the cost of hiring an employee to be three to four times the employee's salary.²³ If, on average, COBOL programmers are paid \$150,000 per year,²⁴ the high-end cost to recruit and hire one programmer could run agencies upward of half a million dollars.



Security Considerations

As technology advances and cybersecurity threats evolve, legacy IT systems become more susceptible to vulnerabilities and require additional investments in security measures. According to the most recent IBM Cost of a Data Breach report, each public sector data breach costs taxpayers \$2.6 million on average (up from \$2.07 million in 2022).²⁵ Legacy systems may lack modern security features, making them more vulnerable to threats. Ensuring these systems are secure can entail additional costs, whether through custom patches, additional security layers, or other means. Since 2014, the U.S. federal government alone is estimated to have suffered 822 breaches affecting nearly 175 million records, costing taxpayers more than \$26 billion over the past eight years from 2014 to 2022.²⁶

21. U.S. Government Accountability Office, "[Federal Agencies Need to Address Aging Legacy Systems.](#)"

22. U.S. Government Accountability Office, "[IRS Needs to Take Additional Actions to Address Significant Risks to Tax Processing.](#)"

23. Society for Human Resource Management, "[The Real Costs of Recruitment.](#)"

24. Based on an analysis of job postings for COBOL developers and programmers at the Internal Revenue Service, the Department of the Treasury, and the Department of Energy.

25. IBM, "[Cost of a Data Breach Report 2023.](#)"

26. Comparitech, "[Government Breaches – Can You Trust the US Government with Your Data?](#)"



Public Trust

Legacy government IT systems that deliver subpar citizen experiences can profoundly affect public trust. These outdated platforms can result in inefficiencies and can make services slower and more error prone.

In recent years, the annual paperwork burden imposed by executive departments and agencies on the public has been more than 9 billion hours.²⁷ Previous research by the U.S. Chamber of Commerce has found that government digitization, using current technology, could generate more than \$1 trillion in additional growth worldwide. The areas identified to digitize are individual income tax return, passport applications and renewals, green card applications, social security applications, and health records.²⁸

As citizens grow accustomed to the conveniences of modern digital services, the government has an opportunity to modernize such that citizen interactions with the public sector reflect those of the private sector. By demonstrating that its services are easy to use and efficient, in addition to being fair, protective of privacy interests, and transparent, the federal government can build public trust.

27. White House, [“Executive Order on Transforming Federal Customer Experience and Service Delivery to Rebuild Trust in Government.”](#)
28. U.S. Chamber of Commerce, [“Government Digitization: Transforming Government to Better Serve Americans.”](#)

The Opportunity: IT Modernization Projects Decrease Costs Over Time

IT modernization projects decrease costs over time, while delivering enhanced security, efficiency, and customer satisfaction.

Researching and understanding the cost savings of IT modernization projects are complex tasks. As part of this project, researchers found a dearth of data around cost savings, especially that which is available in the public domain. The purpose of this report is to highlight a subset of projects where quantitative information on outcomes is available (in many cases, as a result of the Technology Modernization Fund) as illustrative of the outsized impact that IT modernization can have for agencies.

Recent efforts in the U.S. Senate²⁹ and the MITRE organization³⁰ have pushed for more broadly quantifiable data to be made available to Congress on the outstanding legacy IT and modernization efforts at each federal agency, which would shed even more light on this topic.

Following are eight cases with quantitative information in the public domain that demonstrate the significant financial and operational advantages from modernizing legacy IT systems.

29. MeriTalk, [“Sens. Hassan, Cornyn Reintroduce Legacy IT Legislation.”](#)

30. MITRE, [“Ten Recommendations to Modernize Archaic and Insecure Legacy Applications.”](#)

Agency	Core Problem	Outcome
U.S. Department of Agriculture (USDA)	USDA inspectors documented fresh and processed crop facilities using manual checklists and uploaded them into outdated computer systems.	The Specialty Crops Inspection Operating Network (SCION) system modernized the process for the billing, inspection, and certification processes, which reduced food waste and spillage and saved \$1.72 million annually in operations and maintenance costs.

A. Specialty Crops Inspection at the Department of Agriculture

The USDA Agricultural Marketing Service’s Specialty Crops Inspection Division implemented a modernization project to replace its legacy nondigital systems with SCION. The SCION application consolidated two aging legacy systems and provided a modernized holistic tool to manage its billing, inspection, and certificate generation and issuance processes. SCION also enables Agricultural Marketing Service specialty crops inspectors and other users to comprehensively and securely gather and store field evaluation data, interface with internal and external business applications, and process customer order and billing information.³¹

The legacy system incurred annual maintenance and update costs of approximately \$2.5 million. By retiring the outdated system and adopting SCION, the agency projected annual savings of \$1.72 million in operations and maintenance expenses.³²

The SCION system allows inspectors to use tablets to input data directly into USDA systems during facility inspections, thus eliminating the need for manual data entry and manual documentation. This modernization led to increased efficiency and improved services for farmers, small business owners, and consumers involved in the marketing of agricultural products. The USDA’s investment of \$8 million from the Technology Modernization Fund (TMF) resulted in significant cost savings and operational improvements, which reinforced the value of IT modernization in federal agencies.³³

31. U.S. General Services Administration, “The Modernization of USDA’s Specialty Crops Program.”

32. Technology Modernization Fund, “USDA Specialty Crops Inspection.”

33. Ibid.

Agency	Core Problem	Outcome
U.S. Department of Energy	Cost, redundancy, and risk of maintaining 64 separate email systems ³⁴	Consolidated and transitioned 14 email systems to the cloud and added enhanced collaboration tools ³⁵

B. Cloud Email Migration at the Department of Energy (DOE)

Cloud Email Migration at the Department of Energy resulted in significant cost savings by consolidating email environments, migrating 225,853 mailboxes to the cloud, and eliminating duplicative email addresses. Maintaining 64 separate email systems (45 of which were on premises) not only was expensive but also increased the risk of cyberthreats.³⁶ With email systems typically costing \$1 to \$8 per inbox per month, the costs quickly add up.³⁷

Since FY 2018, DOE has completed moving 14 on-premises systems to cloud email, decommissioned one system, and established internally funded migration plans for 12 additional systems.³⁸ This modernization effort brought IT management overhead costs down for 14,000 federal employees, improved operational efficiency, enhanced cybersecurity, and reduced operational risk, thus underscoring the value of IT modernization in federal agencies.³⁹

The \$15.25 million initiative funded through the TMF project to retire the on-premises systems was successful at reducing costs for the department. Vendors played a vital role in championing and modeling a repeatable migration process that could be scaled across the entire agency, including labs and sites.

When faced with COVID-19 restrictions, the team swiftly adopted a 100% remote approach without compromising costs or schedule.

The adaptability of the funding and teams contributed to the project’s success in achieving successful IT modernization initiatives. The robust and repeatable process allowed for mass cutovers of more than 4,000 mailboxes over a single weekend without affecting user productivity, and the reference materials allowed other sites to migrate on their own.⁴⁰

34. Technology Modernization Fund, “Enterprise Cloud Email.”

35. Ibid.

36. Ibid.

37. Forbes, “Best Email Hosting Services (October 2023).”

38. Ibid.

39. Ibid.

40. Ibid.

"The TMF Email project allowed DOE to enhance its cybersecurity posture and reduce IT management/maintenance costs. While the original scope focused on migrating on-premises email environments to the cloud, this project provided mission-critical residual benefits. By leveraging Office 365 G5 licensing, it not only supported DOE's email requirements, the inherent capabilities (i.e., Teams, One Drive for Business) within the Microsoft offering allowed DOE to move toward a maximum telework posture and continue to meet mission while going through a pandemic."

—Todd Brinson, Director at Office of the Chief Information Officer, DOE

Leveraging Office 365 G5 licensing not only provided efficient email services but opened the door to more collaboration capabilities like Teams and OneDrive for Business. The project went beyond technology consolidation, as it introduced agile concepts and principles, leading to their adoption by numerous program offices within the department.

An important part of the project was providing extensive training and change management support and producing detailed materials and videos to facilitate a smooth migration process.

"...when you move to cloud email, it really collapses a lot of those costs into some really basic understandable numbers of this is how much an email box costs. It's a starter version of how you can get some of those costs shrunk down very quickly."

—DOE Chief Information Officer Max Everett⁴¹

41. FedTech, "[Energy Department Aims to Consolidate Email Systems.](#)"

Agency	Core Problem	Outcome
U.S. Department of Labor	A manual system, dependent on a single vendor with a maximum printing capacity of 230 certifications per day.	A cheaper, faster, and more accurate interagency digital data hub capable of issuing 176% more agricultural certificates daily, saving \$1.9 million annually. ⁴²

C. Labor Certificate Modernization at the Department of Labor (DOL)

The DOL achieved substantial cost savings and process improvements by transitioning its Labor Certification process for work visas from a nondigital system to a digital “E-Certification” in November 2020.

The outdated manual process incurred significant expenses in supplies and labor for the roughly 600,000 temporary work visas issued every year. However, the E-Certification implementation resulted in an estimated annual cost avoidance of \$1.9 million, while increasing efficiency and enhancing the end-user experience.⁴³

The new system eliminated artificial barriers and allowed the DOL to issue 176% more H-2A certifications and 109% more H-2B certifications in a single day.⁴⁴ Moreover, it granted farmers and employers immediate access to their certifications, which reduced costly trips and mailing of documents. Instead of receiving a 20-page certification printed on blue security paper in the mail,

the small business owner or farmer now receives a one-page electronic certificate by email, which acts as its boarding pass with U.S. Citizenship and Immigration Services (USCIS).

U.S. Secretary of Agriculture Sonny Perdue stated, “By streamlining these processes, DOL is bringing labor certification into the 21st century, allowing farmers to fill out the required forms faster and more efficiently, because no one should have to hire a lawyer to hire a farm worker.”

The cloud-based system streamlined the entire temporary work visa certification process, thus enabling interagency sharing and improving data management. The successful project, supported by a TMF investment of \$3.5 million, expedited the processing of labor certifications and proved the value of IT modernization in driving significant cost savings and process efficiency for federal agencies.⁴⁵

42. Booz Allen Hamilton project team.

43. U.S. Department of Labor, “Transforming the Permanent Visa Process”; Ibid.

44. Technology Modernization Fund, “Department of Labor Certifications Experience.”

45. Ibid.

Agency	Core Problem	Outcome
U.S. Department of Interior	Reservations for federal facilities and activities were spread across multiple federal, state, and local agencies.	One-stop digital shop for reservations offered through 14 federal agencies, funded through a centralized user fee. Generated \$1 billion in program revenue to date for the federal government, increasing by approximately 19% on average per year. ^{46, 47}

D. Recreation.gov at the Department of Interior

Recreation.gov, a collaborative investment by Booz Allen and 14 federal participating agencies, serves as an example of a successful public-private partnership that revolutionizes the government’s e-commerce platform without using any government funds. Launched in October 2018, the platform leverages cloud-native microservices and continuous delivery to ensure availability, scalability, and seamless user experiences for the 121,000 recreation locations and 4,500 sites and activity reservations offered. Now in its fourth year of operation, Recreation.gov has seen more than 1 billion page views, 160 million site visitors, 5 million mobile app downloads, 23 million users accounts and 43 million transactions and has processed more than \$1 billion in program revenue for the federal government (increasing by approximately 19% on average per year).⁴⁸

Embodying a consumer-friendly design and agile development, supported by cognitive and cloud technologies and secure DevSecOps practices, the platform sets a precedent for elevating the .gov experience to meet dot-com expectations in the federal government’s pursuit of transforming customer experiences.

46. Booz Allen Hamilton, “Reinventing the Recreation.gov Customer Experience”; Booz Allen Hamilton project team.
 47. The average increase from the program’s launch in 2019 through 2023 reflects a large increase from 2020 to 2021 because of COVID-19 and customers pursuing outdoor experiences. Final revenue for 2023 is also projected.
 48. Ibid.

Agency	Core Problem	Outcome
U.S. Department of Homeland Security, Customs and Border Patrol (CBP)	CBP’s 30-year-old collection tool is housed on the agency’s last remaining mainframe solution that runs on 3.9 million lines of COBOL code, costing roughly \$25 million in annual maintenance. ⁴⁹	A single-window cloud-based system interfacing with 49 partner government agencies will save the agency more than \$30 million annually once the legacy mainframe is retired.

E. Customs Modernization at Department of Homeland Security

U.S. Customs and Border Protection (CBP) achieved significant annual savings of \$30 million in operations and maintenance costs by migrating its more than 30-year-old COBOL-based collection tool, the Automated Commercial System, to the cloud-based Automated Commercial Environment (ACE). The legacy system, consisting of 3.9 million lines of COBOL code, was running on the agency’s last remaining mainframe solution and required approximately \$25 million in yearly maintenance expenses.⁵⁰ The TMF investment facilitated the modernization of the payment processing system, resulting in a secure, reliable, and intuitive user experience for CBP, 49 partner government agencies, and the trade community. The transition to ACE also enabled CBP to seamlessly adapt to remote work during the pandemic and to support critical COVID-19 responses, including facilitating

the import and export of vaccinations, testing kits, PPE, and medication between partner government agencies and countries. CBP is expected to fund and deploy its final release in Q1 FY 2024, which will enable the agency to retire the Automated Commercial System mainframe.

In FY 2022, there were 372 million cargo entries and 21 million export shipments that were processed through ACE. The value of those imports totaled \$3.4 trillion, and exports totaled about \$2.1 trillion. All that activity generated more than \$114 billion in duties, taxes, and fees for the U.S. federal government. On a typical day, CBP processes through ACE \$9.32 billion worth of imported goods, and more than 108,000 entries come in through airports, land ports, and seaports. About \$312 million in duties, taxes, and other fees are collected, and more than 91,000 truck, rail, and sea containers are processed each day, all through the ACE system.⁵¹

49. Technology Modernization Fund, “U.S. Customs and Border Protection (CBP) Collection System Modernization”; Federal News Network, “Customs and Border Protection Launches Latest Update to a Very Old System.”

50. Ibid.

51. Ibid.

Agency	Core Problem	Outcome
U.S. Department of Housing and Urban Development	Expensive mainframe and COBOL applications generate significant technical debt.	Cloud-based application suite reduces costs by \$8 million annually.

F. Mainframe to Cloud Migration at the Department of Housing and Urban Development (HUD)

The Unisys migration project resulted in significant cost savings for HUD by decommissioning the Unisys mainframe and transitioning to a cloud virtual machine environment. Both the existing mainframe and the five COBOL-based applications were expensive to maintain and required functional system enhancements to be built in an antiquated mainframe environment, which deepened the technical debt associated with the eventual decommissioning of the platform.

The project modernized five of HUD’s most critical business systems by replacing on-premises Unisys mainframes with cloud-based solutions.

The applications included the Computerized Home Underwriting Management System, the Credit Alert Verification Reporting System, and the Single-Family Default Monitoring Subsystem, which together support the Federal Housing Administration’s \$1.3 trillion mortgage insurance program. The two financial applications are the Line of Credit Control System and the Program Accounting System.⁵²

This transformation reduced infrastructure costs, including hardware, software, and labor resources, which led to an estimated annual savings of \$8 million.⁵³ The migration also enhanced data security, improved system performance, and streamlined operations. It supported 30,000 users across more than 100 HUD grant, subsidy, and loan programs and disbursed \$27 billion annually.⁵⁴ The project consolidated and modernized HUD’s infrastructure, thus reducing technical debt and delivering significant financial benefits through IT modernization.

52. Technology Modernization Fund, “UNISYS Mainframe Migration”

53. Federal News Network, “Department of Housing and Urban Development: Mainframe Migration”

54. Ibid

Agency	Core Problem	Outcome
U.S. Census Bureau	Increase citizen participation, reduce burden to citizens, and decrease agency costs by offering an online response option to the 2020 Census.	Launched the first nationwide online census through a modern website, saving the agency \$1.9 billion.

G. 2020 Census Website at the U.S. Census Bureau

Over the past decade, the U.S. Census Bureau has vigorously pursued digital transformation, culminating in the launch of the first-ever nationwide online census for 2020. This significant advancement was not merely a technological milestone but a strategic one, aimed at improving digital adoption, boosting the response rate, and decreasing costs. However, the Bureau first had to modernize its website, one of the nation’s largest with 5 million pages, and be prepared to handle a spike in traffic of up to 330 million respondents, all during the COVID-19 pandemic.⁵⁵

“I think the way the 2020 census was designed, with having the online response option, really helped insulate us more than we could have possibly hoped. It has been a saving grace for people to be able to respond from the safety of their homes,” said Stephen Buckner, assistant director of communications, U.S. Census Bureau.

The solution included a robust, scalable, and secure content management system hosted in the Federal Risk and Authorization Management Program (FedRAMP) authorized Adobe Managed Services cloud. Adobe’s Experience Manager estimated traffic and provided views on how sites of similar size would handle such volumes. Adobe Analytics enabled better understanding of web traffic and site use as well as the effectiveness of paid media and executed marketing campaigns. Adobe Target assisted with personalization and A/B testing, which enhances the customer experience and helps avoid high abandonment rates.

Historically, the Bureau spent an average of \$107 per person each Census decade, a budget largely consumed by manual labor and fieldwork to reach nonresponsive households.

55. Adobe, “[How the U.S. Census Bureau Went Digital.](#)”

The introduction of an online response option in 2020 was a game changer in cost efficiency.

For every 1% increase in online survey responses, the Bureau realized a savings of \$55 million. Given the push toward online participation, the estimated total savings for the 2020 Census stood at an impressive \$1.9 billion and demonstrated the profound financial benefits of merging modern technology with traditionally manual processes.⁵⁶

This initiative is an excellent example of how agencies can use technology to reduce call and support center costs and to enable employees to focus on more high-value tasks. Similar projects could lead to an increased percentage of citizens enrolling in government benefits and services, especially for underserved communities, increased response rates and engagement with citizens, and improved interagency collaboration through more usable citizen data in a secure, digital format.

56. U.S. Government Accountability Office, [2020 Census: A More Complete Lessons Learned Process for Cost and Schedule Would Help the Next Decennial](#)

Agency	Core Problem	Outcome
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State and local governments

Federal funds, distributed through state and local agencies, lack digital infrastructure for effective delivery.

Improved digital delivery, reduced fraud, and cost savings.

Many Americans experienced a digital interaction as part of the COVID-19 pandemic relief. The ability to distribute funds at speed through stimulus checks, expanded unemployment insurance, and the Paycheck Protection Program was made possible through decades of investment in taxpayer technologies in agencies such as the Treasury Department and the Small Business Administration (SBA).

To help citizens cope with the economic downturn of the pandemic, Congress temporarily increased unemployment benefits by \$655 billion. Since April 2021, however, 23 states have reported fraud estimates that total \$60.4 billion.⁵⁷ Over the course of the COVID-19 pandemic, SBA disbursed approximately \$1.2 trillion of Economic Injury Disaster Loan and Paycheck Protection Program funds, of which \$200 billion (17% of funds) has been identified in as having gone to potentially fraudulent actors; \$30 billion has been seized or returned to SBA.⁵⁸

A recent Juniper Research report estimates that across industries, the use of artificial intelligence can create \$10.4 billion in fraud prevention cost savings by 2027 by helping organizations shift their fraud management resources to where it matters more—investigating key issues—rather than responding to false positives.⁵⁹

New investments in IT modernization, primarily through the Coronavirus State and Local Fiscal Recovery program authorized by the American Rescue Plan Act of 2021, delivered \$350 billion to state, territorial, local, and Tribal governments across the country to support their work, including IT projects that improve vital public services.⁶⁰ Included in the bill was funding to federal agencies to support states in improving digital distribution of social services. A total of \$2 billion was allocated to the DOL to support states in reducing unemployment insurance backlog by modernizing antiquated state unemployment insurance systems to become more agile and better at preventing and detecting fraud.⁶¹

57. Pandemic Oversight, [“Unemployment Insurance Fraud: How Much Has Been Paid to Fraudsters?”](#)

58. Small Business Administration, [“COVID-19 Pandemic EIDL and PPP Loan Fraud Landscape.”](#)

59. Juniper Research, [“AI in Financial Fraud Detection.”](#)

60. Ibid.

61. National Conference of State Legislatures, [“Using ARPA to Modernize Unemployment Insurance.”](#)

A total of \$1.15 billion was allocated in additional Supplemental Nutrition Assistance Program administrative funding to help state agencies modernize their operations, including online and mobile technology; robotic processing automation; agency website, communications, and translation; and customer experience.⁶²

In New Hampshire, \$30 million is being allocated to revamp state technology assets and improve citizen services that faced challenges over the past 18 months. The state's technology department is focused on software-defined networking and updating about 85% of the executive branch's computing equipment. Maintaining robust infrastructure is crucial for effective citizen service delivery and emphasizes the importance of modernizing IT systems and improving cybersecurity.

"But I think what helped us in New Hampshire, and I think elsewhere, is folks now understand that having that infrastructure in place is critical for delivering citizen services."

—New Hampshire Chief Information Officer Denis Goulet⁶³

New Orleans recently allocated \$30 million from the American Rescue Plan Act for the Justice Tech Modernization Program. The initiative is replacing decades-old computer systems with cloud software to enhance data efficiency and interagency information sharing. This modernization will reduce cumbersome, repetitive data entry and paperwork for police officers, provide real-time data for sheriff deputies, expedite legal cases, and reduce court rescheduling. *"New Orleans cannot afford the human and financial toll caused by outdated technology in our justice system,"*

—New Orleans Chief Administrative Officer Gilbert Montañó⁶⁴

Many of the programs funded by COVID-19 pandemic relief monies, including but not limited to the ones mentioned previously, continue to be in process, and the quantifiable outcomes are still calculating. However, the implementation of these programs is a testament to the readiness of the underlying systems that received pre-COVID modernization investments coupled with more recent emergency IT investments. The result was the programs' abilities to quickly and effectively distribute critical services amid major disruption. As the impacts of these programs continue to become clear, the approach can serve as a template for U.S. federal IT investment to create resiliency.

62. Urban Institute, "[Exploring States' SNAP Modernization Projects.](#)"

63. StateScoop, "[States and Localities Got \\$350 billion. Here's How They're Spending It on IT.](#)"

64. City of New Orleans, "[City of New Orleans Selects National Firm to Overhaul Criminal Justice Tech Systems.](#)"

Sources of Cost Savings

Through these cases, cost savings repeatedly emerged from a few key areas in these IT modernization efforts: consolidation, security, and future proofing.

Modern platforms and applications can do more with less maintenance and typically lower licensing costs. As agencies consolidate redundant systems into unified platforms, licensing fees are lowered or eliminated. Newer systems typically require less specialized maintenance, which translates to reduced costs as compared with outdated systems that often demand rare expertise and bespoke solutions.

Security plays a crucial role in cost effectiveness. Although implementing robust modern security measures comes at an expense, these measures can prevent potentially exorbitant costs from data breaches, which include remediation, response, and legal implications.

Investing in modern technology often ensures a certain level of future proofing, where systems are better equipped to integrate with upcoming technological advancements, thus reducing the need for frequent, costly overhauls. Modern IT allows integration with emerging technological trends and reduces the need for frequent, expensive system revamps. Modern solutions streamline operations, automate routine tasks, and enhance service delivery speeds.

By modernizing legacy IT systems, federal agencies not only improve their efficiency and service delivery but also realize tangible financial savings in both the short term and long term.

Modernizing IT Means Decreasing Operating Expenses

The consequences of a reduced federal IT budget are severe and costly and cannot be overlooked. Adequate funding is critical to ensuring systems can operate at capacity, update infrastructure, strengthen cybersecurity, and provide seamless citizen services.

Updated technology is also critical to maintaining centralized government functions, according to a new report by the National Academy of Public Administration. The USDA's National Finance Center (NFC) is responsible for the paychecks for 650,000 civilian federal employees, under a shared service agreement with agencies such as the Department of Homeland Security, Department of Justice, and 170 other customers.⁶⁵ The agency runs on a COBOL-mainframe system, made vulnerable by NFC's shortage of technical staff expertise; loss of

institutional knowledge; and codebase of complex, unstructured, and poorly documented "spaghetti code." Despite disasters like Hurricane Katrina, NFC has never in its history missed payroll but could find itself unable to pay employees in the short term because of a lack of IT modernizations. According to the National Academy of Public Administration:

*"Hiring more programmers is a government-wide challenge because the number of experienced COBOL programmers available in the job market is dwindling. ...But even if NFC were able to hire all the COBOL programmers it needs, those programmers would not necessarily have the ability to immediately work with the 'spaghetti code' resulting from decades of modifications, many of which were not documented."*⁶⁶

65. National Academy of Public Administration, ["Stabilizing and Modernizing the National Finance Center's Operations in Service to the Federal Workforce and the Nation."](#)

66. Ibid.



Path Forward: Policy Recommendations to Advance Federal IT Modernization Efforts



- Congress should pass legislation that requires a complete inventory of all federal legacy IT systems.



- Congress should require each agency to develop modernization plans to update and decommission legacy IT systems.



- Congress should provide robust upfront funding through the appropriations process and working capital funds for federal IT modernization to ensure agencies have the necessary resources to replace outdated legacy infrastructure.



- Congress should use its oversight authority by requiring modernizing agencies to report to them on their efforts. Before the start of any project, agencies should be directed to develop data management plans to ensure effective utilization of the investment.



- Congress should invest in the training and education of the federal workforce to enable it to fully implement and utilize transformative technologies that obtain maximum benefits.

Appendix 1: Technology Explainers

The building blocks for federal IT modernization comprises five parts: Cloud, Data, Artificial Intelligence (AI), Cybersecurity, and Platforms, defined as follows. Each provides essential capabilities and infrastructure that drive efficiency, innovation, and enhanced services. Here is how each component contributes to modernizing federal IT:

Cloud

Cloud technology refers to the delivery of computing services—like storage, processing, and networking—over the internet. Instead of owning and maintaining physical data centers, federal IT decision-makers can use cloud services to achieve scalability, flexibility, and cost effectiveness. The cloud allows agencies to be more agile and respond to demands in real time. This can lead to significant cost savings by transforming capital expenses into operational ones.

Data

Data technology encompasses the collection, storage, analysis, and interpretation of vast amounts of information. For federal IT leaders, harnessing data effectively means improved decision-making, predictive analytics, and enhanced public services. It is crucial for these decision-makers

to manage and analyze data efficiently to ensure data integrity, privacy, and compliance with regulatory standards.

AI

AI involves the creation of algorithms that allow computers to perform tasks that typically require human intelligence. This includes areas like machine learning, natural language processing, and computer vision. For federal IT decision-makers, AI presents an opportunity to automate complex tasks, optimize processes, and deliver more personalized services to the public. However, it also brings challenges in terms of ethics, transparency, and ensuring unbiased algorithms.

Cybersecurity

Cybersecurity involves protecting computer systems, networks, and data from theft, damage, or unauthorized access. Given the sensitivity of government data and the rise in cyberthreats, cybersecurity is a paramount concern for federal IT leaders. The National Cybersecurity Strategy was launched in March 2023 and provides guidance around five pillars: defend critical infrastructure, disrupt and dismantle threat actors, shape market forces to drive security and resilience, invest in a resilient future, and forge international partnerships to pursue shared goals.⁶⁷

67. White House, "[National Cybersecurity Strategy](#)."

Platforms

In IT, platforms refer to the underlying hardware and software solutions on which applications run. For federal IT decision-makers, choosing the right platform is crucial to ensuring compatibility, scalability, and efficient operation of applications and services. Platforms also enable standardization across agencies, making integration, maintenance, and upgrades more streamlined and consistent.

Together, these foundational components enable federal IT modernization by supporting innovation, agility, and cost effectiveness. Leveraging data and AI improves decision-making and service delivery, whereas prioritizing security safeguards sensitive information and ensures reliable operations. Adopting cloud solutions enables scalability and cost savings, and standardized platforms promote interoperability and collaboration among agencies. By integrating these elements, federal agencies can drive transformative changes in their IT infrastructure, which can lead to enhanced citizen-centric services, increased operational efficiency, and improved overall performance.

Appendix 2: About the Research

This research was conducted using a case-based method of selecting federal IT projects that were recently completed, demonstrated modern technology, and were conducted at civilian agencies. The cases were developed primarily from externally available published sources, although some were supplemented with reviews and quotes from implementing vendors or government project managers.

Appendix 3: About the U.S. Chamber of Commerce Technology Engagement Center (C_TEC)

Our nation's future economic success, growth, and competitiveness depend on a thriving and innovative technology sector. Every company is a tech company, and data-driven innovation is the foundation of businesses across the country.

The Chamber Technology Engagement Center (C_TEC) tells the story of technology's role in our economy and advocates for rational policy solutions that drive economic growth, spur innovation, and create jobs.

The U.S. Chamber of Commerce is the world's largest business federation representing the interests of more than 3 million businesses of all sizes, sectors, and regions as well as state and local chambers and industry associations.

The U.S. Chamber's North Star is and has always been to stimulate economic growth and lead the business community's response to solving the nation's most important challenges. For more than 100 years, we have advocated for probusiness policies that help businesses, support jobs, and grow our economy. Our members range from the small businesses and local chambers of commerce that line the Main Streets of America to leading industry associations and large corporations. They all share one thing: They count on the U.S. Chamber to be their voice in Washington, across the country, and around the world.



U.S. Chamber of Commerce
Technology
Engagement Center

